HELSINKI SCHOOL OF ECONOMICS (HSE)
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ABNORMAL RETURNS TO RIVALS OF ACQUISITION TARGETS

European Evidence from 1993 - 2006

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Abstract
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PURPOSE OF THE STUDY
The overall objective of this thesis is to investigate the existence and characteristics of abnormal returns to rivals of acquisition targets in European context during period 1993 to 2006. The research questions are i) Do abnormal returns for rival firms of merging companies exist in Europe?; ii) What are the deal and rival characteristics behind the abnormal returns to rivals of acquisition targets? This thesis adds to the existing literature by finding that the overall rival returns found in Europe are not as significant as the earlier findings in the U.S. and especially by finding that the negative wealth effect takeovers destroy rival shareholder value.

DATA
The dataset used in this thesis consists of 265 takeover announcements that function as the events of this study. For the 265 European targets a rival portfolio of 4327 European companies is formed based on the targets and the rivals sharing a four-digit SIC code. The dataset is divided into sub-samples based the acquirer being a horizontal competitor or a private equity company. Another sub-sample classification is based on the merger announcement being either value creating or value destroying.

METHODOLOGY
This thesis utilizes event study methodology to study the abnormal returns and cumulative abnormal returns for different event windows around the 265 takeover announcements. The ARs and CARs are identified separately for rivals of horizontal targets and for rivals of private equity targets. Also multivariate regression is applied for determining characteristics behind abnormal returns.

RESULTS
Rivals of acquisition targets receive a positive wealth effect of 0.22% on day -1 and negative wealth effect of 0.27% on day zero resulting in the announcement period CARs for different windows being insignificant. For a sub-sample of horizontal deals the results for rival abnormal returns are similar to those in the whole sample. The abnormal returns for rivals of private equity targets are insignificant. The classification based on combined wealth effect yields a clear result. Value destroying (based on 11-day CWE) takeover announcements result in rivals experiencing negatively significant CARs for different windows (for example -1.14% and -4.57% for -1 to 0 and -10 to 10 event windows respectively). A clear result from the multivariate analysis is that the combined wealth effect is significant factor having an effect on rival abnormal returns and especially so that the negative wealth effect takeovers destroy rival value. This is shown in both, the event study analysis and in the multivariate analysis.

KEYWORDS
Mergers and Acquisitions, European M&A, Collusion, Antitrust, Combined Wealth Effect, Rival Abnormal Returns

Helsingin kauppakorkeakoulu
Rahoituksen Pro Gradu –tutkielma
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YRITYSKAUPPAKOHTEIDEN KILPAILIJOIDEN EPÄNORMAALIT TUOTOT
Eurooppalainen aineisto ajalta 1993 - 2006

TUTKIMUKSEN TARKOITUS
Tämän tutkielman tarkoituksena on tutkia eurooppalaisten yrityskauppakohteiden kilpailijoiden saamia epänormaaleja tuottoja, niiden olemassaoloa ja vaikuttavia tekijöitä tuottojen takana, aikavälillä 1993-2006. Tutkimuskysymykset ovat i) Saavatko yrityskauppakohteiden kilpailijat epänormaaleja tuottoja Euroopassa?: ii) Mitkä yrityskauppakohteiden kilpailijoiden saamiin epänormaaleihin tuottoihin vaikuttavat kauppaan ja kilpailijoihin liittyvät ominaisuudet? Tämä tutkielma laajentaa olemassa olevaa kirjallisuutta löytämällä, että Euroopassa yrityskauppakohteiden kilpailijat eivät saa yhtä tilastollisesti merkitseviä tuottoja kuin Yhdysvalloissa ja erityisesti, että arvoa tuhoavat yrityskaupat tuhoavat myös kaupan osapuolien kilpailijoiden osakkeenomistajien arvoa.

AINEISTO
Tämän tutkielman tutkimusaineisto koostuu 265 yrityskauppailmoituksesta, jotka toimivat myös tämän tutkimuksen tapahtuma-ajankohtina. Tutkimusjoukkona toimii neljän numeron SIC-toimialakoodeihin perustuva 4327 yrityksen kilpailijajoukko. Tutkimusjoukko on jaettu kahteen alajoukkoon riippuen siitä onko tapahtuma-ajankohtaan liittyvä yrityskauppa horisontaalinen yrityskauppa vai pääomasijoittajavetoinen yrityskauppa. Toinen alajoukkoihin jako perustuu siihen onko alkuperäinen yrityskauppa kaupan osapuolten arvoa kasvattava vai arvoa tuhoava.

TUTKIMUSMETODIT
Epänormaalien tuottojen ja kumulatiivisten epänormaalien tuottojen tutkimiseen käytetään tutkimusmenetelmänä tapahtumatutkimusmenetelmää (event study) eri tutkimusikkunoilla. Epänormaaleihin tuottoihin vaikuttavia tekijöitä tutkittaessa käytetään monen muuttujan lineaarista regressiomenetelmää.

TULOKSET
Yrityskauppakohteiden kilpailijat tuottavat 0.22% päivänä -1 ja -0.27% tapahtumapäivänä, jolloin kumulatiiviset epänormaalit tuotot eri tutkimusikkunoilla eivät ole tilastollisesti merkitseviä. Horisontaalisten kauppojen alajoukon kilpailijat tuottavat samanlaiset tulokset kuin yllämainitut koko joukon tulokset. Pääomasijoittajavetoisten kauppojen kilpailijoiden tuotot eivät ole tilastollisesti merkitseviä. Arvoa luoviin ja arvoa tuhoaviin yrityskauppailmoituksiin perustuva jako tuottaa selkeät tulokset. Arvoa tuhoavat yrityskauppailmoitukset tuottavat kilpailijoille negatiiviset tilastollisesti merkitsevät tuotot (esimerkiksi -1.14% ikkunalle (-1,0) ja -4.57% ikkunalle (-10,10)). Monen muuttujan regressio tuottaa selvän tuloksen, että kaupan osapuolten yhdistetty arvonmuutos on tilastollisesti merkitsevä tekijä, joka vaikuttaa kilpailijoiden saamiin epänormaaleihin tuottoihin, erityisesti arvoa tuhoavien yrityskauppailmoitusten osalta. Tämä näytetään toteen sekä tapahtumatutkimusmenetelmällä että monen muuttuja regressiomenetelmällä.

AIHESANAT
Yrityskauppa, Epänormaali tuotto, Kilpailuoikeus, Eurooppalainen yrityskauppa, Event study

TABLE OF CONTENTS

INDEX OF TABLES

INDEX OF FIGURES

1 INTRODUCTION

1.1 Background and Motivation

The antitrust issues concerning mergers and acquisitions (M&A) activity have been studied extensively in the US market. The antitrust issues include for example the fears that a particular merger leads to predatory pricing in the marketplace since the merging company gains more market power.

"By means of glasses, hotbeds, and hotwalls, very good grapes can be raised in Scotland, and very good wine too can be made of them at about thirty times the expense for which at least equally good wine can be brought from foreign countries."

Adam Smith (The Wealth of Nations, Book IV, Chapter II)

Based on the citation above, Mr. Smith clearly states that protectionism is not reasonable. Anti-trust authorities do not anymore base their actions on agendas protecting a single country. They protect the competitors and other interest groups such as suppliers and customers of merging companies with their actions to deny a merger from taking place. In this thesis I study the European M&A landscape from viewpoint of rivals of the acquisition targets. The main motivation for studying rival abnormal returns is the fact that the M&A market has been very active in the recent decade and the antitrust authorities face ever larger challenges in determining how much to regulate the trend of consolidation the different markets are experiencing.

The M&A activity has been very active in the U.S. for long time but the fifth mergers and acquisitions wave, the merger wave in the 1990s, was unique in a way that for the first time European M&As played a significant role even when compared to the U.S. and U.K. M&A activity. The M&A activity during the new millennium have been very active, with private equity investors playing larger and larger role in the economy. The M&A activity in the U.S. and in the U.K. has been under heavy investigation for almost three decades (see for example Jensen, 1986; Moeller, Schlingemann and Stulz, 2004). Also the merger activity of the continental Europe has drawn attention. An extensive descriptive study on European M&A activity from the fifth merger wave, that is the time period between 1993-2001, has been conducted by Martynova and Renneboog (2006).

In the case of predatory pricing, mentioned above, the effect of the particular merger should be negative to the rivals of the merging company. Collusion theory (Eckbo, 1983) suggests that rivals of acquisition targets should gain from the merger announcement due to the market moving towards an oligopoly with fewer participants. This is one of the main reasons based on which the anti-trust authorities make their judgements. The most common way of studying M&A in the context of anti-trust is to study whether the M&As have an effect on the rivals, suppliers and customers of the merging companies. This field of studies is comprehensive in the U.S. market (see for example Eckbo, 1983; Eckbo and Wier, 1985; Song and Walkling, 2000 and Shahrur 2005). The European studies on merger interest group effects are fever in number. Aktas, de Bodt and Roll (2007) have investigated the market response to the regulation of European mergers and further investigated the protectionism in the European M&A regulation.

I will study the rival abnormal returns and the characteristics behind rival abnormal returns in the European context with similar methods to Song and Walkling (2000) and Shahrur (2005) to determine whether the phenomena found in the U.S. market are also found in Europe. Therefore I add to the literature by widening the base studies concerning rival abnormal returns and especially providing new information in the European context.

1.2 Research Problem and Limitations

The aim of this study is to examine takeover announcements in Europe and to test whether the horizontal rivals of the takeover targets are affected by the takeover announcement. Moreover, a question to answer in this study is to find out whether the type of the acquirer, namely if the acquirer is a horizontal rival of the target company or if the acquirer is a private equity company, affects the returns that the shareholders of the rival companies experience. The acquisition probability hypothesis suggested by Song and Walkling (2000) proposes that the rival abnormal returns are due to the increased probability of the rivals themselves becoming targets and it can be assumed that the acquisition probability increases as a private equity investor enters an industry. Secondly, the objective of this study is to examine what are the deal and rival characteristics behind the rival abnormal returns.

To conclude the research problem more concisely, I study the following questions:

I. Do abnormal returns for rival firms of merging companies exist in Europe?

II. What are the deal and rival characteristics behind the abnormal returns to rivals of acquisition targets?

The main focus of this study is to describe the rival abnormal returns. Dividing the data sample to different sub-samples allows me to provide a comprehensive picture of the rival abnormal returns. The main limitation of this study is the fact that this study lacks certain amount of width in the context of explaining the factors behind rival abnormal returns. However, I am able to find results on characteristics behind rival abnormal returns, but at the same time I acknowledge that there are most definitely for example industry characteristics, that I am not able to test, that have an effect on rival abnormal returns. A concrete example of such factor is the change in Herfindahl index of the takeover industry. Another limitation with this study is the rival identification of each deal in the deal sample. Due to availability of data I have to use present SIC-codes instead of historical SIC-codes to identify the rivals of each deal. I also acknowledge that due to rivals being identified with SIC-codes there can be rivals in the rival portfolios that are not direct competitors of the deal that the rival is assigned for.

1.3 Related Research and Contribution

The M&A activity have been studied widely for many decades, especially in the U.S. market. For instance Jensen (1986), Roll (1986) and Bradley, Desai and Kim (1988) are among the most cited studies. Also the European M&A market have drawn attention. As mentioned above Martynova and Renneboog (2006) have conducted a comprehensive study on the European M&A market. M&A studies from the anti-trust viewpoint include those by Eckbo (1983), Eckbo and Weir (1985), Song and Walkling (2000), Aktas de Bodt and Roll (2007) and Shahrur (2005). Theories such as collusion, predatory pricing, market pressure and acquisition probability hypothesis have been proposed to explain for the found positive rival abnormal returns.

Song and Walkling (2000) and especially Shahrur (2005) study the characteristics behind rival abnormal returns in the U.S. context. Song and Walkling (2000) develop the acquisition probability hypothesis which implies that the rival abnormal returns are due to increased probability of becoming a target in the industry where the initial takeover has occurred.

Shahrur (2005) finds that the combined wealth effect of the proposed combined entity has clearly a positive relation with the realized rival abnormal returns.

Contribution

Aktas et al. (2007) use European data, however, in an anti-trust context and study what are market responses to the different actions of European anti-trust authorities. I will also study the European rival abnormal returns but instead of emphasizing the anti-trust interventions I will contribute to the existing literature by applying the study design of Shahrur (2005) to a European fresh data set. The most important result, and thus contribution, of this thesis is the result that value destroying acquisition announcements destroy significantly also rival shareholder value. I also find that the actual announcement effect for the rivals of acquisition targets is not significant and thus I can state that the results found in the European context differ from the significant positive returns for rival firms in the U.S. market.

I divide my deal sample to horizontal deals and private equity deals in order to find differences in the rival abnormal returns based on the deal type. I expect to find larger rival abnormal returns for rivals of private equity targets due to private equity investor entering an industry signalling of potential consolidation in the industry. I find results opposite of my expectation, i.e. rival abnormal returns are less significant for private equity targets than for horizontal targets.

1.4 Definitions of the Key Concepts

Abnormal Return is the return to a security in excess of the market return. In the case of event study abnormal return is the return to the sample portfolio over/under the market return.

Acquisition, M&A and Merger are all terms that are used mutually in this thesis to mean a combination of two entities.

Anti-trust means competition law, i.e. supervising M&A of companies. Transactions that are considered to threaten the competitive process can be prohibited altogether, or approved subject to "remedies" such as an obligation to divest part of the merged business.

Collusion is a term to refer to acts of cooperation or collaboration among rival entities. Collusion takes place within an industry when rival companies cooperate for their mutual

benefit. Collusion most often takes place within the market form of oligopoly, where the decision of a few firms to collude can significantly impact the market as a whole.

Combined Wealth Effect (CWE) is the market value-weighted abnormal or cumulative abnormal return of the target and the bidder in a given acquisition announcement.

Cumulative Abnormal Return (CAR) is the cumulative sum of abnormal returns for a given event window.

Enterprise Value (EV) is a measure of a company's value. EV is calculated as market capitalization plus debt, minority interest and preferred shares, less total cash and cash equivalents.

Oligopoly is a market form in which a market or industry is dominated by a small number of sellers. Because there are few participants in this type of market, each market participant is aware of the actions of the others.

Private Equity (PE) is equity securities of companies that are not listed on a public exchange.

1.5 Structure of the Study

In Section 2 the literature and the theories behind mergers and acquisitions as well as the theories behind rival abnormal returns in merger announcements are presented. Section 3 provides an overview of the hypotheses of this thesis and Section 4 presents a description of the data sample and the methodology used in the study. In Section 5 the results of this study are presented and finally in Section 6 the study is concluded with remarks on potential future research.

2 LITERATURE AND THEORY

Mergers and acquisitions activity has been under heavy investigation for decades. The most cited studies include those by Jensen (1986), Roll (1986) and Bradley, Desai and Kim (1988). More recent, and very extensive, study of the field has been conducted by Moeller Schlingemann and Stulz (2004). As the aforementioned studies are conducted with US data sample, Martynova and Renneboog (2006) have studied the European merger activity in an extensive manner. All of the mentioned studies describe and explain the abnormal returns to acquirers and targets and the phenomena behind these returns as well as theories explaining why the M&As and consequent returns occur. Eckbo (1983), Eckbo and Wier (1985), Song and Walkling (2000) and Shahrur (2005) have put their effort in finding abnormal returns to rivals of acquisition targets as well as trying to describe the factors that explain rival abnormal returns.

In the following subsections I will describe the abovementioned studies, among others, to provide a thorough look at the merger literature from the view point of rival returns. In Section 2.1 the theories behind acquirer and target abnormal returns are presented. Section 2.2 provides an overlook to the European M&A activity and in Section 2.3 I present the field of studies concerning the rival abnormal returns in mergers and acquisitions. Finally, in Section 2.4 the studies that describe determinants for the abovementioned rival abnormal returns are presented.

2.1 Overview of the Merger Literature

The empirical literature agrees on the fact that the targets and acquirers combined gain in takeovers. However, the literature is also unanimous on the fact that the gains accrue mostly to target shareholders while the acquirer shareholders' returns are often negative, zero or just slightly positive, however most of the time not significant. Bradley et al. (1988) studied 236 successful tender offers in US from time period 1963-1984. They found that cumulative abnormal return (CAR) for bidder and target combined was positive for all sub-periods as well as for the total period, namely 7.4% for the total period. The returns for bidders alone were not significant, which is in line with what other studies have found, as mentioned earlier. Further studies are in line with findings of Bradley et al. Lang, Stulz and Walkling (1989), Healy, Palebu and Ruback (1992) and Andrade, Mitchell and Stafford (2001) compute

average abnormal returns for the combined firm of 11% for 1968-86, 9% for 1979-84 and 1.8% for 1973-98, respectively.

The target firms' shareholders receive large positive announcement returns in takeover situations. The premiums are on average 10% to 30% in relation to the pre-announcement share price of the target. For example, Jarrell and Poulsen (1989), Kaplan and Weisbach (1992), Mulherin and Boone (2000) calculate average U.S. target abnormal returns of 29% (for 1963–86), 27% for (1971–82), and 21% (for 1990-99), respectively.

Earlier empirical results in the US and Europe correspond with each other in the unequal distribution of merger gains between the bidder and the target. In the following, reasoning for this phenomenon will be developed. According to Brealey, Myers and Allen (2006), sellers usually end up better off than buyers. The authors define two reasons for this phenomenon. First, the different size of the bidder and the target plays a major role in imbalances of merger gain distribution. The bidder is often much bigger than the target, leading to significantly higher abnormal returns to the target when the merger gains are equally shared in absolute dollar values. The second and more important reason occurs in cases in which different companies are bidding for the same target. The competitors are bidding up the price, leaving most of the merger gains to the stockholders of the target. Hence, it is rather straightforward to argue that the target company experiences a positive wealth effect in any case.

Roll (1986) discusses the fact that bidders are usually overpaying their targets. Given strong market efficiency, the target's true value is given through the stock price. Tender offers exceeding the market value of the company are consequently made on the management's hubris. Considering cases in which a rival to the bidder exists, they will bid up the price to a point, at which the winner is paying more than the target is worth even though management might still believe in the opportunity to extract synergies and to improve efficiency. Roll (1986) defines this phenomenon as *hubris hypothesis*. It says that the bidder overestimates the value or the potential of synergies and, thus, pays too much. Consequently, the bidder's wealth effect will be negative, while the target experiences a strong raise in its stock price. The combined return of the merger is close to zero.

Jensen (1986) argues that the acquiring firms with excess cash destroy value by overbidding. Also other papers have shown evidence that free cash flow is frequently used for managerial

empire building (see e.g. Servaes 1991 and Lang, Stulz and Walkling 1991). Jensen (1986) introduces an agency problem, namely the free cash flow hypothesis, between the managers and the shareholders of the acquirer company. By free cash flow, Jensen (1986) means the cash flow in excess of stakeholder payments and positive net present value – projects. According to the free cash flow hypothesis the shareholders would prefer the excess cash to be distributed to them instead of using the cash to empire building and diversifying managers' personal risks by diversifying firm's assets. Harford (1999) finds results that are in line with Jensen's (1986) free cash flow hypothesis. According to Harford (1999) cash rich firms are more probable to attempt acquisitions and moreover, acquisitions by cash-rich firms are particularly bad, destroying an average of seven percent of excess cash reserves in market value.

Moeller et al. (2004) studied a sample of 12,023 acquisitions in 1980-2001 in order to examine the effect of acquirer size to the abnormal returns to the parties involved in acquisitions. They found out that the acquirer shareholders gain on average +1.1%, i.e. the equally weighted average abnormal return the shareholders was +1.1%. However, in dollar terms the acquirer shareholders lose on average 25 million U.S. dollars. Moeller et. al (2004) findings suggest that larger deals are worse. Moreover, they suggest that large companies make large dollar losses while small companies make small dollar gains.

2.2 European Merger Activity

The empirical evidence from the European market concerning M&A announcement effects is in line with the US evidence presented in Section 2.1. Similarly to their U.S. counterparts, U.K. and Continental European targets gain average announcement returns of 24% during the period 1955-85 (Franks and Harris 1989), 19% in 1966-91 (Danbolt 2004), 13% in 1990-2001 (Goergen and Renneboog 2004) and 9% in 1990-2001 (Martynova and Renneboog 2006).

The abovementioned 9% target gain (Martynova and Renneboog 2006) is even larger, amounting to 21%, if the price run-up period before the announcement is accounted for. Martynova and Renneboog (2006) provide a comprehensive overview of the European takeover market. The main findings concerning the characteristics of the fifth merger wave in their study are:

I. Most of the intra-European M&As in 1990-2001 were cross-border transactions.

II. M&A activity tended to occur between firms in related industries.

III. Financial structure of the deals evolved during the period: from all cash to combination of cash, equity and debt and moreover to all-equity.

IV. Hostile bids became more frequent towards end of the period in Continental Europe while in U.K. the number of hostile bids decreased compared to the merger wave of 1980s.

Especially interesting concerning the topic of this study is the second finding. It can be expected that the M&As that occur between firms in related industries, i.e. between horizontal rivals, have more definitely an effect on the rival firms in the same industry. This is based on intuition of the situation so that the intra-industry deals result in market participants with more pricing power and thus the rivals of the larger merged companies are either better or worse off. The theories concerning market power and possible collusion are described in Section 2.3. Martynova and Renneboog (2006) state that the abovementioned four characteristics suggest that the European takeovers in the 1990s occurred mainly for reasons of cost cutting, expanding into new markets or exploiting the mispricing premium.

According to Martynova and Renneboog (2006) the hostile bids trigger larger price reactions, 15% compared to three percent for the friendly deals, to the target share holders. They also find out that all-cash offers have a larger impact, 12% compared to seven percent for all-equity offers, on target share prices. Additionally they find that domestic mergers result in higher abnormal gains to target shareholders than cross-border operations. The last finding regarding deal characteristics that Martynova and Renneboog (2006) find, is that the announcement effect is significantly larger for the target share holders in diversifying bids than in intra-industry or focus-oriented bids.

2.3 Rival Abnormal Returns

The effect of M&A activity on target companies' interest groups have been studied extensively. Rival, supplier and customer share price reactions have drawn research attention for more than a decade. As this thesis describes the effects of acquisitions to the horizontal interest groups, that is the rival companies, in this section I present the previous literature regarding abnormal returns to rivals of acquisition targets.

According to Eckbo (1983, 1985) the horizontal competitors of the acquisition targets earn significant abnormal returns of 0.76% over seven day period surrounding the merger

announcement. Eckbo and Weir (1985) find similar announcement period abnormal gains. Mitchell and Mulherin (1996) find also results that are in line with the abovementioned earlier studies. They report 0.5% abnormal return to rival shareholders during the month of the announcement. The origin of the positive returns to rivals remains unexplained. The hypotheses that have been put forward for explaining the abnormal return of merger rivals include those by Eckbo (1983), Eckbo and Wier (1985), Song and Walkling (2000) and Aktas, de Bodt and Derbaix (2003). Let us take a more thorough view on the proposed hypotheses on rival abnormal returns. Table 1 in the end of this section provides an overview of the hypotheses.

2.3.1 Market Power Hypothesis

Market power hypothesis (MPH) was first developed by Eckbo (1983). Market power hypothesis by Eckbo includes two sub-hypotheses, namely the collusion hypothesis developed by Eckbo and a counter hypothesis called predatory pricing hypothesis. Aktas et al. (2003) further developed the market power hypothesis by creating another sub-hypothesis, called the market pressure hypothesis.

Collusion

A horizontal takeover reduces the number of firms in the takeover industry. This implies that it is easier for the industry participants to monitor and interact with other industry participants and thus easier to collude (Eckbo, 1983). An increase in the likelihood of collusion results in higher monopoly rents that will benefit the merging firms and their industry rivals (Eckbo, 1983). As outlined in the second column of Table 1, under the collusion hypothesis, the announcement of a takeover should be associated with positive abnormal returns to the merging firms and their rivals. Eckbo tests the collusion theory by examining the effect of the takeover on rival firms, which are expected to benefit from a collusive merger. This is done by examining the impact of antitrust announcements, which challenge the proposed mergers, on the merging firms as well as on the rivals. Eckbo finds no evidence on the rival firms being negatively impacted at the antitrust announcements that challenge the takeovers. This is inconsistent with the collusion hypothesis. Eckbo and Wier (1985) and Song and Walkling (2000) also find evidence that is inconsistent with the collusion hypothesis.

Predatory Pricing

It can be suggested that if the horizontal mergers typically take place to realize scale economies, the resulting expansion of merging firms' market share would enable the merged firm to engage in a price war (Eckbo, 1983). So this would have a negative impact on the rivals if they are not able to implement the same strategy. Eckbo finds evidence that contradicts this suggestion. Moreover, Eckbo's evidence indicates that the wealth impact to the rivals is similar to that of the merging firms, that is the good news for the merging firms typically also signals good news for the rivals. However, Aktas et al. find evidence that support the predatory pricing hypothesis.

Market Pressure

Aktas et al. (2003) propose a third hypothesis consistent with the market power hypothesis called the market pressure hypothesis. According to Aktas et al. the mergers could lead the new larger firm to engage in abuse of dominant position. Aktas et al. use this hypothesis to test the effect of mergers on suppliers and customers as well as on rivals. In this context the abuse of dominant position includes improper exploitation of customers and suppliers. In the case of rivals the abuse of dominant position in the market consists of anti-competitive business practices used, such as exclusion of the rivals, in order to maintain or increase its position on the market. In the context of rival effects the market pressure hypothesis is similar to the predatory pricing hypothesis. The market pressure hypothesis implies negative abnormal returns for all of the above mentioned interest groups. (Aktas et al., 2003)

2.3.2 Acquisition Probability Hypothesis

The acquisition probability hypothesis (APH) developed by Song and Walking (2000) suggest that rival's stock prices react positively because the deal signals an increased probability that the rivals themselves will become targets. This hypothesis is based on a model in which the appearance of a bidder willing to pay a premium for a given target is proof of valuation differential for at least the given target within the industry. Appearance of an unexpected acquisition in the industry causes shock waves that result in market reassessing the probability of other firms in the industry to become targets themselves. (Song and Walkling, 2000)

Compared to the collusion hypothesis the implications of APH are quite different. The implication that the two theories share is that the rival firms experience positive abnormal

returns. In collusion hypothesis the acquisitions need to be horizontal, by definition, where as in APH the relation of the target and bidder industries is unrestricted. Song and Walkling (2000) test their hypothesis on a sample of 141 targets and 2459 rivals over the 1982-1991 period. They find five main results that they state being consistent with the acquisition probability hypothesis:

I. Rival firms realize positive abnormal returns in any case not depending on the target and bidder industry relation or on the success of the acquisition.

II. The abnormal returns to rivals are higher when the magnitude of surprise about the acquisition is higher

III. The characteristics of targets are similar to those of rivals that subsequently become targets but different of those rivals that don't.

IV. The variation between different rival returns is systematically associated with the probability of acquisition.

V. The magnitude of rival abnormal return is significantly positively related to the probability of becoming a target.

The acquisition probability hypothesis is tested in this study from the viewpoint of the first result that Song and Walkling (2000) found. As will be presented in Section 4 I do not restrict the data sample to only successful and horizontal takeovers.

2.3.3 Overview of the Rival Abnormal Hypotheses

In Table 1 are the abovementioned hypotheses presented with their respective expected implications to the abnormal returns. These hypotheses are kept in mind when analyzing the results of this thesis.

Table 1. Theories behind abnormal returns to merging companies and their rivals

Theory predicting the source of abnormal returns	Abnormal returns to merging firms	Abnormal returns to rival firms
Market Power Hypothesis: Collusion	Positive	Positive
Market Power Hypothesis: Predatory Pricing	Positive	Negative
Market Power Hypothesis: Market Pressure	Positive	Negative
Acquisition Probability Hypothesis	Positive	Positive

Source: Aktas et al. (2003)

2.4 Determinants of Rival Abnormal Returns

In this section I will present earlier literature on determinants of rival abnormal returns. First I will present findings of Fee and Thomas (2004) and then findings of Shahrur (2005). Both articles present determinants of wealth gains in acquisition announcements from viewpoint of not only rival firms but also customer and supplier firms. I will limit my analysis to describing the wealth effects to the rival firms.

Fee and Thomas (2004) investigate upstream, downstream and horizontal interest group effects of mergers and acquisitions with large sample from period 1980 through 1997. They find that rival firms realize positive abnormal returns at the announcements and furthermore the realized effect is not negative, as expected, when the anti-trust authorities challenge the proposed mergers. Their results are thus strongly inconsistent with the collusion hypothesis. The most important determinant affecting to the magnitude of observed rival abnormal return is the level of concentration in the industry. Fee and Thomas (2004) find that CAR for the (-1,1) event window is 0.54% for all deals (significant in 1% significance level). Moreover, same CAR for deals that occurred in 4-digit SIC industries with Herfindahl index in excess of 2000 is 2.01% (significant in 5% significance level). Furthermore, the CAR for deals which resulted in change of at least 100 in Herfindahl index is 2.53% (1% significance level). Thus,

Fee and Thomas (2004) can reliably state that the level concentration inside an industry is a clear determinant of rival abnormal returns.

Shahrur (2005) finds change in the industry's Herfindahl index to be negatively related the realized rival abnormal return. This finding is inconsistent with the abovementioned collusion hypothesis, which predicts a positive relation. Shahrur (2005) also tests the interaction between change of Herfindahl index and supplier concentration in the industry as a determinant of rival abnormal returns. The found coefficient is positive and significant which implies that rival firms benefit from the takeover between two large industry firms only when their suppliers are concentrated. Otherwise, i.e. with only the change of Herfindahl index as the variable, the realized effect is negative as presented above. Finally, Shahrur (2005) finds that the combined wealth effect to the bidder and the target is strongly significant variable having an effect on the rival abnormal returns. The implication of this finding is that the value creating merger proposals result in positive rival abnormal returns and value destroying merger proposals result in negative rival abnormal returns. I will test this implication by dividing the sample, in the Section 5.3.1, into value creating and value destroying deals.

3 HYPOTHESES OF THE STUDY

In this section I develop the hypotheses for testing the theories arising from the earlier literature. The methodological and data issues concerning each of the hypotheses are addressed in Section 4.

H1. There is a positive wealth effect to the shareholders of horizontal rivals of the European acquisition targets.

The abnormal returns for rivals of acquisition have been discovered by multitude of studies as explained in Section 2.3. For example Eckbo (1983), Eckbo and Weir (1985), Song and Walkling (2000) and Shahrur (2005) all find positive abnormal returns to rivals of acquisition targets, however all of these studies have been conducted with U.S. data rather than European data. Abovementioned studies present CARs for different event windows. Positive abnormal returns support the collusion theory (Eckbo, 1983) and acquisition probability hypothesis (Song and Walkling, 2000) and negative findings support the predatory pricing hypothesis and the market pressure hypothesis (Aktas et al., 2003). I will report abnormal returns and cumulative abnormal returns extensively to test whether I find similar results.

H2. The abnormal returns to the horizontal rivals of the European acquisition targets are positively related to the relative size of the deal.

The larger the change in the industry's competitive environment due to a given deal, the larger the wealth effect to the rival shareholders should be. This hypothesis assumes that there is a wealth effect to the rival shareholders. Relative size acts as a measure of magnitude of shock to the industry from the deal (Shahrur, 2005). Relative size is the ratio of the market capitalization of the target to that of the bidder, with both values being measured ten days prior to the announcement of the takeover (Shahrur, 2005). I will test this determinant of rival abnormal returns as one of the independent variables in the multivariate regression with the sub-sample of data that I have the target market data for.

H3. The abnormal returns to the horizontal rivals of the European acquisition targets are positively related to the absolute enterprise value of the target at the time of the announcement.

The larger the shock to the competitive environment that the rival firm is functioning in the larger should be the effect on the rival firm abnormal returns. Target enterprise value is the absolute enterprise value of the target at the time of the deal announcement measured in millions of U.S. dollars. I will test this determinant of rival abnormal returns as one of the independent variables in the multivariate regression.

H4. The abnormal returns to the horizontal rivals of the European acquisition targets are positively related to the combined wealth effect of the deal for the bidder and the target.

Combined wealth effect (CWE) is the cumulative abnormal return to a value-weighted portfolio of bidder and target firms over the (-5,5) event window. Shahrur (2005) finds that combined wealth effect is significantly positively related to the abnormal gains received by the rival shareholders. Positive CWE acquisitions result in rivals experiencing positive abnormal returns and negative CWE acquisitions result in rivals experiencing negative abnormal returns. Shahrur (2005) finds that combined wealth effect is significantly positively related to the abnormal gains received by the rival shareholders. I will test this determinant of rival abnormal returns as one of the independent variables in the multivariate regression with the sub-sample of data that I have the target market data for.

H5. The abnormal returns to the horizontal rivals of the European acquisition targets are negatively related to the growth rate of the rival firm's sales during the previous fiscal year preceding the takeover announcement.

Song and Walkling (2000) find that abnormal returns to individual rival firms are negatively related to the rival firm's sales growth rate. Song and Walkling (2000) state that this is consistent with the aforementioned acquisition probability hypothesis since Palepu (1986) finds that firms with lower growth rates are more likely to be acquired. Thus, the analogy goes so that lower growth rate result in higher probability of becoming acquired and thus the abnormal return is higher when a firm is acquired from the industry that rival company is in. I will test this determinant of rival abnormal returns as one of the independent variables in the multivariate regression in Section 5.5.

H6. The abnormal returns to the horizontal rivals of the European acquisition targets are positively related to the leverage level of the rival firm.

Song and Walkling (2000) find that rival firms with higher leverage earn significantly higher abnormal returns. I will test this possible determinant of rival abnormal returns as one of the independent variables in the multivariate regression.

H7. The abnormal returns to the horizontal rivals of the European acquisition targets are positively related to the acquirer being a private equity company instead of an ordinary horizontal competitor.

The increasing role of private equity companies in the consolidation phenomenon of the last decade rises a question whether the abnormal gains to rival shareholders are larger in the case that the acquirer is a private equity company. According to the acquisition probability hypothesis by Song and Walkling (2000) the abnormal gains are due to increased probability of the rivals to become targets themselves. I assume that a private equity investor as the acquirer signals that the rivals are in an industry where more consolidation is to be expected. Thus the rival announcement effect is larger according to the acquisition probability hypothesis. I will use a acquirer type dummy variable for testing this possible determinant of rival abnormal returns in the multivariate regression in Section 5.5. Results that are in line with this hypothesis would support the acquisition probability hypothesis by Song and Walkling (2000).

H8. The abnormal returns to the horizontal rivals of the European acquisition targets are positively related to target and rival being originated in the same country

I assume rivals in the same country as the target being usually listed in the same market place and in closer competition with the new entity being formed. Shahrur (2005) finds that in US the regional rival firms that function in the same region as the target realize a larger positive wealth effect. I will test this in European setting via creating dummy variable for the multivariate regression.

4 DATA AND METHODOLOGY

In this Section the data, hypotheses and methodology are presented. In Section 4.1 the data gathering process as well as descriptive statistics of the data is presented. In Section 4.2 I describe the methodology.

4.1 The Data Sample

The sample of this thesis includes two deal samples of European mergers and acquisitions launched between the years 1993 and 2006 and the consequent stock market data of the target companies and of the rivals of the target company. The deal samples are gathered from the SDC Mergers and Acquisitions Database of Thomson Financial. I construct two different deal samples. First, I construct a deal sample which consists of horizontal takeovers and secondly a deal sample of takeovers in which private equity companies act as a bidders.

4.1.1 M&A Deal Samples

I define a horizontal takeover as one between a bidder and a target that share the same four digit SIC code. The SIC codes for acquirers and targets are included in the data drawn form SDC. The primary SIC code is in most cases the main and only industry that a given target firm operates in. In Shahrur's (2005) data sample 90% of targets and 77% of bidders are single-segment firms. He also finds that 95% of targets and 90% of bidders have more than 75% of their sales derived from their primary segment. I select only domestic and intra-European mergers. Thus, both the acquirer and the target are from countries within Continental Europe and U.K. Both the acquirer and the target of the horizontal sample have to be publicly listed. This ensures the availability of market data for performing the multivariate regression analysis presented in Section 4.2.1.

The private equity (PE) deal sample is defined so that the bidder must not necessarily be a publicly listed company. However, also in this deal sample the target must be a publicly listed company. This ensures the availability of the market data required to perform the analysis of the study. This is obvious due to the fact that in a deal in which a PE investor is the bidder a new investment company is formed and this company is identified as the bidder in the SDC M&A database. The identification of deals in which a PE investor is the bidder is conducted via limiting the sample to deals in which the deal type is identified as "Leveraged Buyout".

The limitations to the deal samples presented in this and the following paragraph are common for both deal samples, i.e. the horizontal deal sample and the PE deal sample. The deals that are included in the samples are not only completed deals but also takeover attempts. The takeovers intending to buy only a participation under 51% in the target company are excluded. The 51% cut-off is used in order to make sure that the actual event is significant enough to make a possible difference in share price movement of the rival of the target on hand. Another filter to the data sample is the fact that I avoid dealing with the special regulatory environment related to financial institutions, namely SIC codes between 6000-6999.

I also exclude the bids that are made for the same target company 240 trading days before the actual event date. This prevents the potential bias to the estimation parameters, needed for the market model[1], caused by the earlier bid. Additionally, at least 100 trading days of market data is required for the target firm, and for the potential rival firms, to be included in the sample in order to make sure that the estimation period is sufficiently long. With this procedure I follow the work of Fee and Thomas (2004).

The market and share price data is drawn from DataStream database. I include the share prices of shares with voting rights. Shares with voting rights are defined as ordinary shares or class A shares for the companies that have dual-class shares. After screening the deals with the limitations above I find the final M&A deal sample consisting of 104 horizontal deals and 161 private equity deals. Market price data is found for 21 of the horizontal deals and for 34 of the private equity deals. The low number of firms for which market data is found causes a

[1] See Section 4.2.1 for detailed description of the estimation methodology.

problem when analyzing the effect of combined wealth effect on the possible rival abnormal returns. However, the missing target market data is not problem for the rival abnormal return analysis itself since the targets in the deal sample function only as benchmarks for which the rivals are identified for. The abnormal returns analysis is performed on both the targets and on the rival firms but the objective of this study is mainly to study the existence and characteristics of the rival abnormal returns, not the target abnormal returns. Tables 2 and 3 and Figures 1 and 2 show the distribution of the deals for different years and for different European countries.

Table 2: Deal Distribution Based on Years

Table shows the distribution of the deal sample into different years during the period studied. Horizontal deals are intra-European deals in which bidder and target share a common four-digit SIC code. Private Equity deals are deals identified as LBOs by SDC.

Year	Horizontal	Private Equity	Total
1993	4		4
1994	3	1	4
1995	8		8
1996	2	1	3
1997	9	3	12
1998	7	15	22
1999	25	35	60
2000	11	26	37
2001	6	23	29
2002	3	12	15
2003	6	9	15
2004	6	7	13
2005	8	10	18
2006	6	19	25
Total	104	161	265

Figure 1: Deal Distribution Based on Years

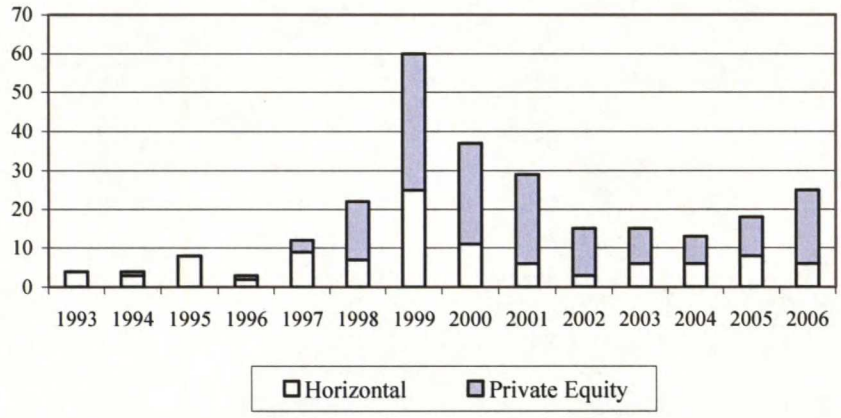
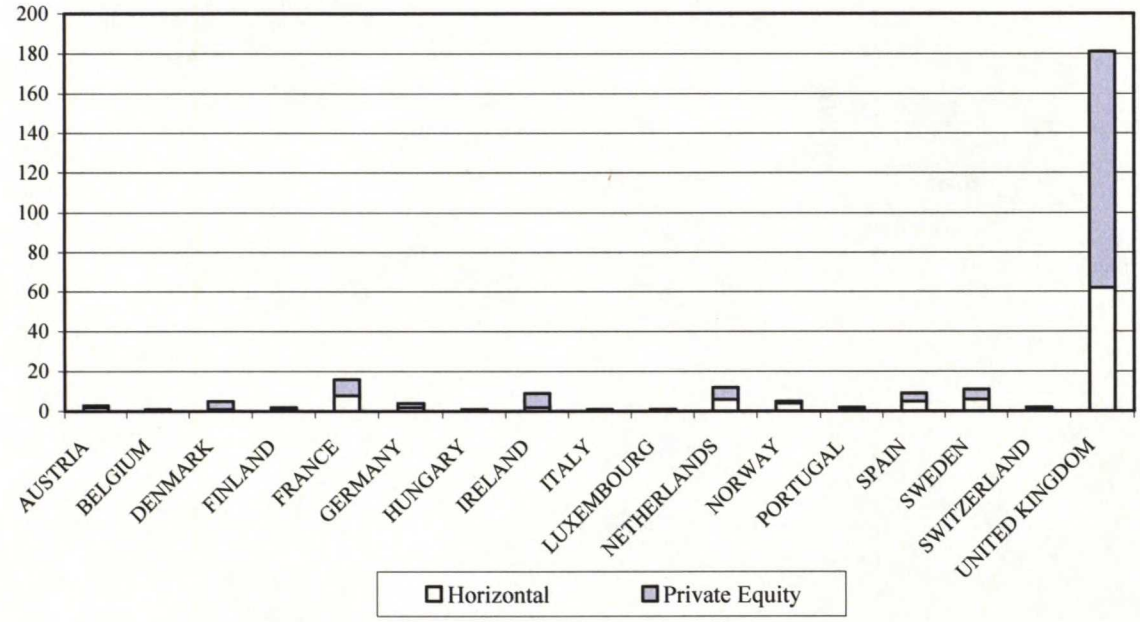


Table 3: Deal Distribution between Different Countries

Table shows the distribution of the deal sample into different countries based on the home country of the target. Horizontal deals are intra-European deals in which bidder and target share a common four-digit SIC code. Private Equity deals are deals identified as LBOs by SDC.

Home Country	Horizontal	Private Equity	Total
AUSTRIA	2	1	3
BELGIUM	1		1
DENMARK	1	4	5
FINLAND	1	1	2
FRANCE	8	8	16
GERMANY	2	2	4
HUNGARY		1	1
IRELAND	2	7	9
ITALY	1		1
LUXEMBOURG	1		1
NETHERLANDS	6	6	12
NORWAY	4	1	5
PORTUGAL	1	1	2
SPAIN	5	4	9
SWEDEN	6	5	11
SWITZERLAND	1	1	2
UNITED KINGDOM	62	119	181
TOTAL	104	161	265

Figure 2: Deal Distribution between Different Countries



4.1.2 Identifying Rivals

In this section the procedure to identify the horizontal rivals is presented. This identification process is adapted from Shahrur (2005).

The construction of rival portfolios follows the method of determining horizontal takeovers. I consider as rival firms only the firms that operate, or have been operating at the time of the takeover, in the same four-digit SIC industry and naturally in the intra-European area.

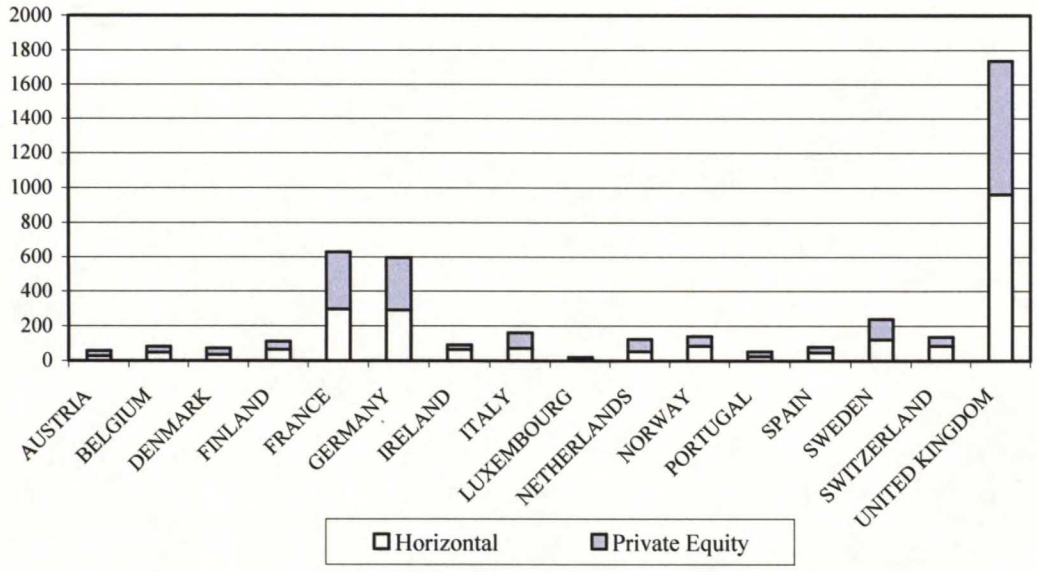
The SIC code data for identifying rivals is drawn from Datastream database. As the study period is fairly long, that is 13 years, the possibility that the SIC code of a given company in the sample has changed during the study period should be taken into account. The primary SIC code data is based on the current SIC codes of the companies and therefore historical SIC code data should be used together with the primary SIC code data. However, there was no historical SIC code data available and I have to keep this potential bias in mind while analyzing the results. Table 4 and Figure 3 show the distribution of the rivals between different countries.

Table 4: Distribution of Rivals between Different Countries

Table shows the distribution of the rival sample into different countries based on the home country of the rival. Column Horizontal presents the number of rivals for horizontal delas and columsn Private Equity presents the number of rivals for Private Equity deals.

Home Country	Horizontal	Private Equity	Total
AUSTRIA	27	30	57
BELGIUM	48	34	82
DENMARK	34	38	72
FINLAND	65	46	111
FRANCE	297	332	629
GERMANY	292	304	596
IRELAND	64	26	90
ITALY	71	90	161
LUXEMBOURG	9	11	20
NETHERLANDS	54	70	124
NORWAY	85	55	140
PORTUGAL	25	28	53
SPAIN	47	32	79
SWEDEN	122	117	239
SWITZERLAND	84	53	137
UNITED KINGDOM	962	775	1737
TOTAL	2286	2041	4327

Figure 3: Distribution of Rivals between Different Countries



4.2 Methodology

The methodological approach concerning the measurement of abnormal returns by means of the event study approach applied in this paper follows Brown and Warner (1985). The article forms the cornerstone for most event studies based on daily stock returns. In Section 4.2.1 the event study methodology will be presented and discussed in detail. Section 4.2.2 includes a description of the multivariate regression method used in this study to determine the characteristics that have an effect on the realized abnormal returns.

4.2.1 Event Study Method

Each event has an event day, which in the context of this study is the actual merger announcement day. The event day is defined as day zero. Share price information is gathered for every single security for altogether 181 trading days. The range lasts from day –170 until day +10.

The entire period is divided into two sub periods. The first period lasts from day T_0 =-170 to T_1 = -11, and is called the estimation window. As will be discussed below, the estimation window is needed to estimate ordinary least squares (OLS). In order to be able to calculate the estimates reliably, it is crucial to have an estimation period which is long enough. In this paper, the estimation period is 159 days. The other period, the event window lasts from day

$T_1 = -10$ to day $T_2 = +10$. Also other event windows inside the longest 21-day window are used. This is in line with the work of Shahrur (2005).

Excess returns in an event study can be calculated in different ways. According to Brown and Warner (1985), one can distinguish the *mean adjusted returns*, the *market adjusted returns* and the *ordinary least squares (OLS) market model*. Most commonly used of the three is the market model. Also this paper uses the market model approach. Abnormal returns in the OLS market model are calculated as

$$AR_{it} = R_{it} - \alpha - \beta R_{mt} \quad (1),$$

where

AR_{it} = Abnormal return for firm i on day t

R_{it} = Return for firm i on day t

α = OLS intercept from the market model for firm i

β = OLS market coefficient from the market model for firm i

R_{mt} = Return to the market proxy

where α and β are OLS values from the estimation period (Brown and Warner, 1985). β and α can be explained graphically as the slope of the security market line and the intercept of the security market line, respectively. R_{mt} is a general market index is chosen respective to country of the origin depending on the security.

To determine the abnormal returns for each event date, t, the abnormal returns for all the firms, i, are aggregated as

$$\overline{AR}_{it} = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad (2).$$

Moreover, the abnormal returns are cumulated in order to obtain Cumulative Abnormal Returns (CAR) for the given firm. The cumulating is done as

$$CAR_{t_1 t_2} = \sum_{t_1}^{t_2} \overline{AR}_{it} \quad (3).$$

The null hypotheses of ARs and CARs equalling zero can be tested using a common one-sample t-test. By means of the t-test the statistical significance of ARs and CARs is tested as

$$t_t = \frac{\overline{AR_t}}{S} \quad (4),$$

and

$$t_{t_1} t_{t_2} = \frac{CAR_{t_1 t_2}}{S\sqrt{N}} \quad (5),$$

where

S = standard deviation

N = number of days.

S is the standard deviation of the abnormal returns calculated from the sample firms for the estimation period.

Combined Wealth Effect

Shahrur (2005) uses combined wealth effect for dividing the sample of deals under study to value creating and value destroying ones. The combined wealth effect for the new combined entity is calculated as the market value-weighted average of the acquirer and target returns. First the abnormal returns for the combined entity (AR_{Ci}) are calculated as

$$AR_{Ci} = \frac{AR_{Ai,t} \times MV_{Ai} + AR_{Ti,t} \times MV_{Ti}}{MV_{Ai} + MV_{Ti}} \quad (6),$$

where

$AR_{Ai,t}$ = Abnormal return for acquirer i for day t,

$AR_{Ti,t}$ = Abnormal return for target i for day t,

MV_{Ai} = Market value of acquirer i 30 days prior to the announcement,

MV_{Ti} = Market value of target i 30 days prior to the announcement.

The calculation of cumulative abnormal returns for the combined entity is performed with ARs of the combined entity as it is shown in equation (3). The statistical testing of ARs and CARs is performed as it is shown in equations (4) and (5), respectively.

4.2.2 Multivariate Regression

To examine the effects of different variables on the cumulative abnormal returns multiple regression is employed. The cumulative abnormal return for the (-5,5) event window is modelled with a regression equation with 8 explanatory variables which might be the possible characteristics having an effect on the realized cumulative abnormal return.

$$CAR_{(-5,+5)} = \alpha + \beta_1 SALESGR + \beta_2 CWE + \beta_3 GEARING + \beta_4 LNSIZE + \beta_5 RELATSIZE + \beta_6 D_{SameCountry} + \beta_7 D_{PE} + \varepsilon \quad (7),$$

where

α = OLS regression intercept

$SALESGR$ = Growth rate of the rival firm's sales

CWE = Combined wealth effect

$GEARING$ = Gearing level of the rival firm

$LNSIZE$ = Natural logarithm of the deal size

$RELATSIZE$ = Ratio of the market capitalization of the target to that of the bidder

$D_{SameCountry}$ = Dummy variable controlling whether the rival has same country as its' target

D_{PE} = Dummy variable controlling whether deal is horizontal.

SALESGR is the growth rate, in percentages, of the rival firm's sales during the previous fiscal year preceding the takeover announcement. The coefficient of this variable should be negative since lower growth rate results in higher probability of becoming acquired which in turn should result in higher abnormal return for the company. Palepu (1986) finds that firms with lower growth rates are more likely to be acquired. The growth rates for rival firms are drawn from Thomson Financial Worldscope database.

CWE, combined wealth effect, is the cumulative abnormal return to a value-weighted portfolio of bidder and target firms over the (-5,5) event window. Shahrur (2005) finds that combined wealth effect is significantly positively related to the abnormal gains received by the rival shareholders and thus I expect this variable to have a positive coefficient. The sample of targets and acquirers that I am able to find market data for, from Datastream, is 18 deals. However, the number of deals for these target and bidder combinations is 628 and thus the sample size for finding the possible effect of CWE is sufficient.

GEARING is the gearing level of the rival firm measured in the last quarter report preceding the announcement. I expect the sign of this variable to be positive. Song and Walkling (2000) find that rival firms with higher leverage earn significantly higher abnormal returns. The data for this variable is drawn from Worldscope.

LNSIZE is the natural logarithm of the absolute dollar value enterprise value of the target at the time of the announcement. The sign of the coefficient is expected to be positive based on an analogy that larger deal has a larger effect on rival firm's abnormal return. The data for this variable is gathered from SDC.

RELATSIZE is the relative size of the deal, that is the ratio of the market capitalization of the target to that of the bidder, with both values being measured ten days prior to the announcement of the takeover (Shahrur, 2005). Expected sign for coefficient of this variable is positive. Relative size is a measure for measuring the size of shock to the industry from the deal (Shahrur, 2005). The data for this variable is drawn from Datastream.

$D_{SameCountry}$ is a dummy variable for controlling whether the rival is from the same country as the target. Rivals that are from the same country as the targets get a value of one and the rivals that are from other European countries than the target get a value of zero. I expect the coefficient of this variable to be positive. I assume rivals in the same country as the target being usually listed in the same market place and in closer competition with the new entity being formed. Thus the effect on rival return should be larger.

D_{PE} is a dummy variable for controlling whether the deal, that the rival on hand is defined for, is a private equity deal. Rivals defined for the targets of the private equity deal sample get a value of one and the rivals defined for the targets of the horizontal deal sample get a value of zero. According to the acquisition probability hypothesis by Song and Walkling (2000) the abnormal gains are due to increased probability of the rivals to become targets themselves. Positive coefficient for this variable would support the abovementioned acquisition probability hypothesis since private equity investor being the acquirer signals that the rivals are in an industry where more consolidation is to be expected.

Table 5: Descriptive Statistics of Variables in the Multivariate Analysis

Table reports descriptive statistics for the variable in the multivariate analysis. SALESGR is the growth rate, in percentages, of the rival firm's sales during the previous fiscal year preceding the takeover announcement. GEARING is the gearing level of the rival firm measured in the last quarter report preceding the announcement. Dummy SameCountry is a dummy variable for controlling whether the rival is from the same country as the target. CWE, combined wealth effect, is the cumulative abnormal return to a value-weighted portfolio of bidder and target firms over the (-5,5) event window. Dummy PE is a dummy variable for controlling whether the deal, that the rival on hand is defined for, is a private equity deal. LNSIZE is the natural logarithm of the absolute dollar value enterprise value of the target at the time of the announcement. RELATSIZE is the relative size of the deal, that is the ratio of the market capitalization of the target to that of the bidder.

Variable	N	Min	Max	Mean	Standard dev.
LNSIZE	4156	-0.29	11.29	5.22	2.14
RELATSIZE	628	0.01	4.69	0.51	0.80
CWE (%)	628	-6.24	11.94	1.93	4.78
SALESGR (%)	3908	-100.00	80742.68	97.16	1878.23
GEARING (%)	4108	-65293.00	37501.92	62.91	1316.11
Dummy PE	4327	0.00	1.00	0.47	0.50
Dummy Same Country	4327	0.00	1.00	0.29	0.46

Table 6: Pearson Correlations of the Variables in the Multivariate Analysis

Table reports pearson correlations for the variables in the multivariate analysis. SALESGR is the growth rate of the rival firm's sales during the previous fiscal year preceding the takeover announcement. GEARING is the gearing level of the rival firm measured in the last quarter report preceding the announcement. Dummy SameCountry is a dummy variable for controlling whether the rival is from the same country as the target. CWE, combined wealth effect, is the cumulative abnormal return to a value-weighted portfolio of bidder and target firms over the (-5,5) event window. Dummy PE is a dummy variable for controlling whether the deal, that the rival on hand is defined for, is a private equity deal. LNSIZE is the natural logarithm of the absolute dollar value enterprise value of the target at the time of the announcement. RELATSIZE is the relative size of the deal, that is the ratio of the market capitalization of the target to that of the bidder. N/A means that the variable pair on don't have common cases, i.e. no data points that would have values for both variables.

	LNSIZE	CWE	SALESGR	GEARING	RELATSIZE	Dummy PE	D SameCountry
LNSIZE	1						
N	4156						
CWE	0.157***	1					
N	614	628					
SALESGR	0.002	-0.101**	1				
N	3747	555	3908				
GEARING	-0.003	-0.007	0.000	1			
N	3940	590	3891	4108			
RELATSIZE	0.265***	0.313***	-0.032	-0.028	1		
N	614	628	555	590	628		
Dummy PE	-0.095***	N/A	0.013	-0.020	N/A	1	
N	4156	628	3908	4108	628	4327	
D SameCountry	0.012	-0.152***	0.007	-0.002	0.013	-0.083***	1
N	4156	628	3908	4108	628	4327	4327

Note: *** 1% signifigance, ** 5% signifigance, * 10% signifigance

5 ANALYSIS OF THE RESULTS

The results of the study are presented in this section. This section is structured as follows. First the results for cumulative abnormal returns are presented for the target portfolio. Target results are followed by the abnormal returns for whole data set of rivals and then by both rival deal samples separately. In Section 5.5 the results from the multivariate regression are presented and finally in the last sub-section I discuss and conclude the results.

5.1 Abnormal Returns for Target Portfolio

In order to make sure that there really is a shock to the competitive environment that the rival companies are functioning in, I present the results for target portfolio abnormal returns. Even though the sample of targets is quite limited, total number of targets being 56, I can reliably state that the shareholders of the target companies realize on day zero on average 8.20% abnormal return. This result is significant with 1% significance level. This abnormal return is not quite as large as in some of the earlier studies in which it has been shown that the premiums are on average 10% to 30% in relation to the pre-announcement share price of the target. For example, Jarrell and Poulsen (1989), Kaplan and Weisbach (1992), Mulherin and Boone (2000) calculate average US target abnormal returns of 29% (for 1963–86), 27% for (1971–82), and 21% (for 1990-99), respectively.

There are possible explanations for lower than normal announcement day premium. One possible explanation is information leakage. The abnormal returns for days -6, -4, -3 and -1 are more than 1% (significance levels 10%, 10%, 5%, 10%, respectively), ranging from 1.27% to 1.58%, which is a sign from the fact that there has been information about the acquisition leaking to the market prior to the announcement day. This can be seen very clearly in Figure 4 from day -6 onwards. The cumulative abnormal return for window ranging from -10 to -1 for the whole sample is 5.61 with 5% significance which. Another explanation is the fact that due to the limiting the M&A sample to only horizontal acquisitions and leveraged buyouts I have a sample with high density of private equity deals, that is 35 out of 56 deals. In the PE sample the announcement day premium is 6.19% (1% significance level, t-stat of 5.05). In the horizontal sample the announcement day premium is 11.46% (1% significance level, t-stat of 18.5).

The combined wealth effect (CWE) for the sample of horizontal takeovers on announcement day is 1.12% (1% significance level, t-stat of 3.19), 1.67% (1% significance level, t-stat of 3.09) for the (-1,0) event window and 2.82% (5% significance level, t-stat of 2.33) for the (-5,5) event window. These results are consistent with the evidence on wealth gains that Shahrur (2005) and Andrade et al. (2001) find. The percentage of positive CWE is about 72% over the (-5,5) window. Following Shahrur (2005) I will divide my sample of rival returns of horizontal mergers based on CWE of the merger being either positive or negative. This analysis is presented in Section 5.3.1.

In Table 7 the daily abnormal returns from day -10 to +10 for the whole sample of targets are shown. Figure 4 shows the accumulation of abnormal returns to the whole set of targets. In Table 8 the cumulative abnormal returns for different event windows and three sets of targets are presented.

Table 7: Daily Abnormal Returns for the Whole Sample of Targets

Table shows the abnormal returns for the whole sample of targets for days (-10,10). Also the t-statistic is presented for each of the ARs. Confidence levels are presented on the right-hand side of the respective t-values.

Day	Abnormal Return	Cumulative Abnormal Return	t-stat	
-10	-0.25 %	-0.25 %	-0.32	
-9	-0.36 %	-0.61 %	-0.47	
-8	-0.65 %	-1.26 %	-0.85	
-7	0.13 %	-1.14 %	0.16	
-6	1.33 %	0.20 %	1.74	*
-5	0.53 %	0.73 %	0.70	
-4	1.27 %	1.99 %	1.65	*
-3	1.58 %	3.58 %	2.07	**
-2	0.61 %	4.19 %	0.80	
-1	1.42 %	5.61 %	1.85	*
0	8.20 %	13.81 %	10.71	***
1	-0.14 %	13.67 %	-0.18	
2	-0.38 %	13.28 %	-0.50	
3	0.21 %	13.50 %	0.28	
4	0.65 %	14.14 %	0.85	
5	-0.03 %	14.11 %	-0.04	
6	0.22 %	14.34 %	0.29	
7	0.35 %	14.69 %	0.46	
8	0.18 %	14.87 %	0.23	
9	-0.18 %	14.69 %	-0.23	
10	0.38 %	15.07 %	0.50	
		n=56		

Note: *** 1% signifigance, ** 5% signifigance, * 10% signifigance

Figure 4: Cumulative Abnormal Returns for Whole Sample of Rivals for period (-10,10)

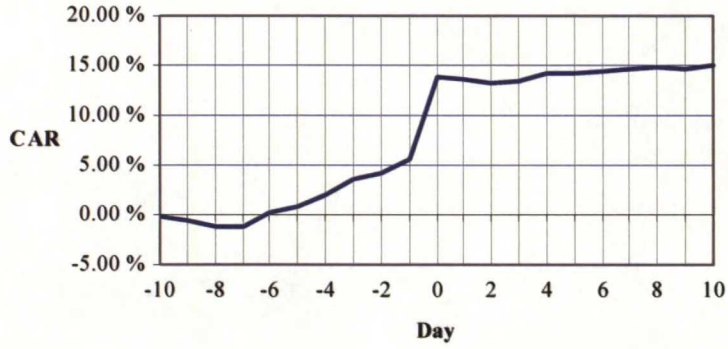


Table 8: Cumulative Abnormal Returns for Target Portfolios

Table shows the cumulative abnormal returns for the target portfolios for different event windows. Also the t-statistic is presented for each of the CARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Both samples			Horizontal sample			PE sample		
	CAR	t-stat		CAR	t-stat		CAR	t-stat	
	n=55			*n=21*			*n=34*		
Pre-announcement									
CARs (-10,-1)	5.61 %	2.32	**	4.88 %	2.45	**	6.05 %	1.56	
Announcement									
CARs (-1,0)	9.61 %	8.88	***	12.82 %	14.36	***	7.63 %	4.41	***
CARs (-2,+2)	9.71 %	5.67	***	13.35 %	9.46	***	7.46 %	2.72	***
CARs (-10,+10)	15.07 %	4.29	***	16.71 %	5.78	***	14.06 %	2.51	**
Post-announcement									
CARs (0,+1)	8.06 %	7.44	***	11.46 %	12.84	***	5.96 %	3.44	***
CARs (0,+5)	8.51 %	4.54	***	12.29 %	7.95	***	6.17 %	2.06	**
CARs (0,+10)	9.46 %	3.73	***	11.83 %	5.65	***	8.00 %	1.97	**
CARs (+10,+20)	0.30 %	0.12		0.61 %	0.29		0.11 %	0.03	

Note: *** 1% significance, ** 5% significance, * 10% significance

5.2 Abnormal Returns for Full Sample of Rivals

The abnormal return on the announcement day for the whole sample of rivals is -0.07% with no significance (see column Rivals B in Table 9). However for the sample of rivals that have also the target market data the announcement day abnormal return is -0.27% with 5% significance level. The cumulative abnormal return for period 0 to +5 for the same sample is -0.53% with significance level of 10%. These results are somewhat contradictory to those of Eckbo (1983) and Song and Walkling (2000). They find positive results for the announcement period. This result contradicts the collusion theory by Eckbo (1983). However, significant negative abnormal returns are in line with the market pressure theory and consequent findings of Aktas et al. (2003). CAR for period (-10,10) is not significant and therefore I have to conclude that these results are not reliably supporting any of the theories mentioned above. The results that Eckbo (1983) among others find are for the whole announcement period and thus the most comparable results that I have is CAR for the 11-day window, that is for period (-10,10).

In Table 9 the daily abnormal returns from day -10 to +10 for the whole sample of rivals are shown. Figure 5 shows the accumulation of abnormal returns to the sample of rivals, that includes rivals of both the horizontal and the PE targets but only the rivals which have also target market data (column Rivals A in Table 9). In Table 10 the cumulative abnormal returns for different event windows and two sets of rivals are presented.

Table 9: Daily Abnormal Returns for the Whole Sample of Rivals

Table shows the abnormal returns for the whole sample of rivals for days (-10,10). Column Rivals A presents the ARs for a sample of rivals that have target market data in the target portfolio. Column Rivals B presents the ARs for all the rivals in the horizontal sample. Also the t-statistic is presented for each of the ARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Rivals A				Rivals B			
Day	Abnormal Return	Cumulative Abnormal Return	t-stat		Abnormal Return	Cumulative Abnormal Return	t-stat	
-10	-0.12 %	-0.12 %	-0.97		0.03 %	0.03 %	0.35	
-9	0.09 %	-0.03 %	0.70		0.08 %	0.11 %	0.87	
-8	-0.02 %	-0.06 %	-0.18		0.09 %	0.20 %	0.95	
-7	0.13 %	0.08 %	1.07		-0.01 %	0.20 %	-0.06	
-6	-0.04 %	0.04 %	-0.29		-0.04 %	0.15 %	-0.48	
-5	0.11 %	0.15 %	0.86		-0.07 %	0.09 %	-0.70	
-4	0.12 %	0.26 %	0.94		0.11 %	0.19 %	1.13	
-3	0.33 %	0.59 %	2.66	***	0.20 %	0.39 %	2.13	**
-2	0.06 %	0.65 %	0.48		-0.06 %	0.33 %	-0.59	
-1	0.22 %	0.87 %	1.81	*	0.10 %	0.43 %	1.07	
0	-0.27 %	0.60 %	-2.20	**	-0.07 %	0.36 %	-0.79	
1	0.07 %	0.67 %	0.54		-0.01 %	0.35 %	-0.14	
2	-0.11 %	0.56 %	-0.89		-0.02 %	0.32 %	-0.26	
3	-0.06 %	0.50 %	-0.50		0.01 %	0.33 %	0.10	
4	-0.12 %	0.37 %	-0.99		-0.08 %	0.25 %	-0.86	
5	-0.03 %	0.34 %	-0.26		0.08 %	0.33 %	0.86	
6	-0.02 %	0.32 %	-0.20		-0.03 %	0.30 %	-0.34	
7	0.20 %	0.52 %	1.62		-0.03 %	0.27 %	-0.30	
8	0.10 %	0.61 %	0.78		0.00 %	0.27 %	-0.01	
9	-0.13 %	0.48 %	-1.07		-0.16 %	0.11 %	-1.74	*
10	-0.20 %	0.28 %	-1.64		-0.17 %	-0.06 %	-1.81	*
		n=1501				*n=4327*		

Note: *** 1% significance, ** 5% significance, * 10% significance

Figure 5: Cumulative Abnormal Returns for Whole Sample of Rivals for period (-10,10)

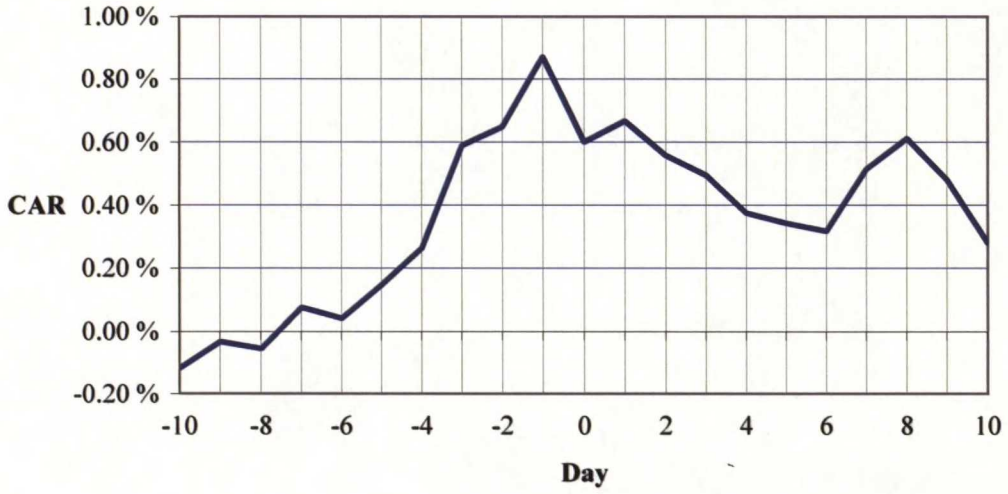


Table 10: Cumulative Abnormal Returns for the Whole Sample of Rivals

Table shows the cumulative abnormal returns for the whole sample of rivals for different event windows. Column Rivals A presents the CARs for a sample of rivals that have target market data in the target portfolio. Column Rivals B presents the CARs for all the rivals in the sample. Also the t-statistic is presented for each of the CARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Rivals A			Rivals B	
	CAR	t-stat		CAR	t-stat
	n=1501			*n=4327*	
Pre-announcement					
CARs (-10,-1)	0.87 %	2.24	**	0.43 %	1.47
Announcement					
CARs (-1,0)	-0.05 %	-0.27		0.03 %	0.20
CARs (-2,+2)	-0.03 %	-0.12		-0.07 %	-0.32
CARs (-10,+10)	0.28 %	0.50		-0.06 %	-0.14
Post-announcement					
CARs (0,+1)	-0.21 %	-1.17		-0.09 %	-0.66
CARs (0,+5)	-0.53 %	-1.76	*	-0.10 %	-0.44
CARs (0,+10)	0.59 %	-1.45		-0.49 %	-1.59
CARs (+10,+20)	0.21 %	0.51		-0.11 %	-0.37

Note: *** 1% significance, ** 5% significance, * 10% significance

5.3 Abnormal Returns for Horizontal Sample

The abnormal return on the announcement day for the horizontal sample of rivals is -0.21% with no significance (see column Rivals B in Table 11). The test statistic is -1.55, that is the abnormal return is close to being significant in 10% level. However for the sample of horizontal rivals that have also the target market data the announcement day abnormal return is -0.56% with 1% significance level. Also the day -1 return is highly significant, however positive of 0.54%. The cumulative abnormal return for period 0 to +5 for the same sample is -0.53% with significance level of 10%. CAR for pre-announcement period (-10,-1) is significantly positive 1.09% (5% significance level).

The results in this sample are similar, however stronger, to the results that I have in the previous whole sample section. CAR for period (-10,10) is not significant which is again not in line with Eckbo (1983) and Song and Walkling (2000), but again in line with market pressure theory by Aktas et al. (2003). The significant positive CAR before the announcement day could be due to market reacting to the information leakage of the potential takeover in the same industry. This can be seen also in Figure 6. I demonstrated the information leakage phenomenon with the targets of this sample. As mentioned earlier, CAR for period (-10,10) is not significant and therefore I have to conclude that these results are not significantly supporting any of the theories suggested in Section 2.3.3.

In Table 11 the daily abnormal returns from day -10 to +10 for the horizontal sample of rivals are shown. Figure 6 shows the accumulation of abnormal returns to the sample of rivals, that includes only the horizontal sample rivals which have also target market data (column Rivals A in Table 11). In Table 12 the cumulative abnormal returns for different event windows and two sets of horizontal sample rivals are presented.

Table 11: Daily Abnormal Returns for the Horizontal Sample of Rivals

Table shows the abnormal returns for the horizontal sample of rivals for days (-10,10). Column Rivals A presents the ARs for a sample of rivals that have target market data in the horizontal target portfolio. Column Rivals B presents the ARs for all the rivals in the horizontal sample. Also the t-statistic is presented for each of the ARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Rivals A				Rivals B			
Day	Abnormal Return	Cumulative Abnormal Return	t-stat		Abnormal Return	Cumulative Abnormal Return	t-stat	
-10	-0.25 %	-0.25 %	-1.48		0.08 %	0.08 %	0.60	
-9	0.15 %	-0.11 %	0.85		0.15 %	0.23 %	1.16	
-8	0.03 %	-0.08 %	0.17		0.16 %	0.40 %	1.23	
-7	0.08 %	0.00 %	0.47		-0.01 %	0.38 %	-0.10	
-6	-0.20 %	-0.20 %	-1.18		-0.18 %	0.20 %	-1.39	
-5	0.06 %	-0.14 %	0.35		-0.16 %	0.04 %	-1.17	
-4	0.05 %	-0.09 %	0.30		0.03 %	0.07 %	0.20	
-3	0.40 %	0.31 %	2.33	**	0.16 %	0.23 %	1.19	
-2	0.24 %	0.55 %	1.41		-0.04 %	0.19 %	-0.28	
-1	0.54 %	1.09 %	3.15	***	0.06 %	0.26 %	0.49	
0	-0.56 %	0.53 %	-3.28	***	-0.21 %	0.05 %	-1.55	
1	0.18 %	0.71 %	1.07		0.02 %	0.07 %	0.17	
2	-0.05 %	0.66 %	-0.31		-0.10 %	-0.03 %	-0.75	
3	-0.06 %	0.60 %	-0.37		0.00 %	-0.03 %	-0.04	
4	-0.25 %	0.35 %	-1.45		-0.07 %	-0.10 %	-0.52	
5	0.15 %	0.50 %	0.89		0.01 %	-0.09 %	0.04	
6	0.04 %	0.54 %	0.24		-0.06 %	-0.15 %	-0.46	
7	0.13 %	0.67 %	0.77		-0.13 %	-0.28 %	-0.98	
8	0.12 %	0.79 %	0.71		0.01 %	-0.28 %	0.05	
9	-0.23 %	0.57 %	-1.32		-0.29 %	-0.57 %	-2.18	**
10	-0.23 %	0.33 %	-1.37		-0.08 %	-0.64 %	-0.57	
		n=706				*n=2286*		

Note: *** 1% significance, ** 5% significance, * 10% significance,

Figure 6: Cumulative Abnormal Returns for the Horizontal Sample of Rivals for period (-10,10)

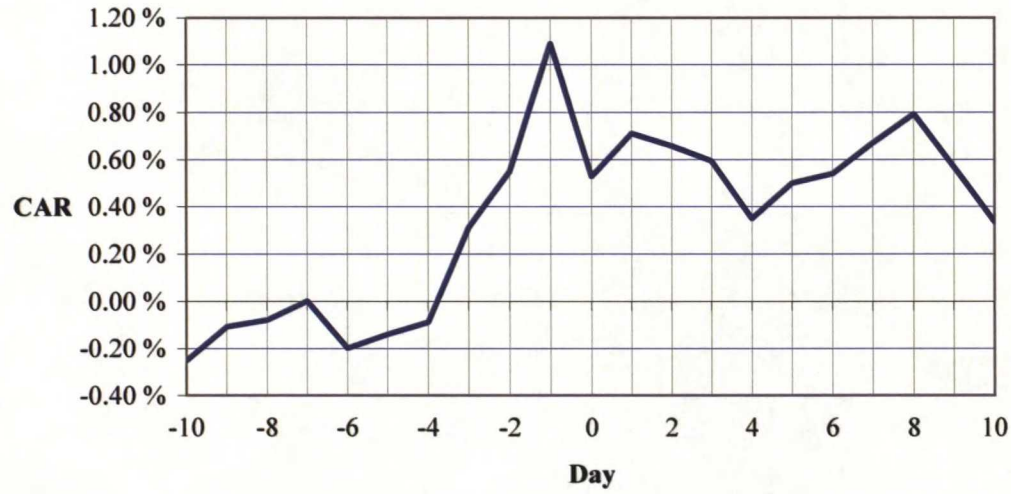


Table 12: Cumulative Abnormal Returns for the Horizontal Sample of Rivals

Table shows the cumulative abnormal returns for the horizontal sample of rivals for different event windows. Column Rivals A presents the CARs for a sample of rivals that have target market data in the horizontal target portfolio. Column Rivals B presents the CARs for all the rivals in the horizontal sample. Also the t-statistic is presented for each of the CARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Rivals A			Rivals B		
	CAR	t-stat		CAR	t-stat	
	n=706			*n=2286*		
Pre-announcement						
CARs (-10,-1)	1.09 %	2.02	**	0.26 %	0.61	
Announcement						
CARs (-1,0)	-0.02 %	-0.09		-0.14 %	-0.75	
CARs (-2,+2)	0.35 %	0.91		-0.25 %	-0.86	
CARs (-10,+10)	0.33 %	0.43		-0.64 %	-1.06	
Post-announcement						
CARs (0,+1)	-0.38 %	-1.56		-0.18 %	-0.98	
CARs (0,+5)	-0.53 %	-1.76	*	-0.10 %	-0.44	
CARs (0,+10)	-0.59 %	-1.45		-0.49 %	-1.59	**
CARs (+10,+20)	0.21 %	0.51		-0.11 %	-0.37	

Note: *** 1% significance, ** 5% significance, * 10% significance

5.3.1 Combined Wealth Effect

As mentioned in Section 5.1 I find that the combined wealth effect (CWE) for the (-5,5) window is significantly positive of 2.82%. However, as mentioned above, CWE is not positive in all of the horizontal deals. All the theories behind rival abnormal returns, presented in section 2.3.3 predict a positive CWE and thus the sample of rival returns should be divided into value-creating and value-destroying sub-samples based on CWE being either positive or negative. With this procedure I follow the work of Shahrur (2005)

The results for daily abnormal returns for the sub-sample with positive CWE are similar those presented above with the total sample of rivals of horizontal acquisition targets. The abnormal return on the announcement day for the positive CWE horizontal sample of rivals is -0.32% with weak significance (see column Positive CWE in Table 13). The test statistic is -1.40, that is the abnormal return is close to being significant in 10% level. Again, the day -1 abnormal return is significantly positive 0.61% (1% significance level). All the CARs for the announcement period are insignificant, i.e. I don't find evidence supporting any of theories in the market power hypothesis presented in Section 2.3.1. Neither do these results support the acquisition probability hypothesis by Song and Walkling (2000).

The results for daily abnormal returns for the sub-sample with negative CWE are negatively significant for the announcement day as well as for the announcement and post-announcement period CARs. For example CAR for the (-10,10) event window is -4.57% with 1% significance level. However, as mentioned above, all the theories behind rival abnormal returns predict a positive CWE and thus these significantly negative results cannot be interpreted without uncertainty. If we let go of the assumption that the combined new entity must have positive combined wealth effect, we can state that these results support the predatory pricing theory. This interpretation needs an assumption that the new combined entity is able to price products aggressively compared to its' rivals due to its' larger size even though the negative wealth effect from the merger.

In Table 13 the daily abnormal returns from day -10 to +10 for the horizontal sample of rivals with two sub-samples based on acquirer and target combined wealth effect are shown. Figure 7 shows the accumulation of abnormal returns to the above-mentioned sub-samples of rivals.

In Table 14 the cumulative abnormal returns for different event windows and the two above-mentioned sub-samples of horizontal sample rivals are presented.

Table 13: Daily Abnormal Returns: Sample Divided Based on Combined Wealth Effect

Table shows the abnormal returns for two sub-samples of the horizontal sample of rivals for days (-10,10). Column Positive CWE presents the ARs for a sample of rivals of which the combibed wealth effect for the portfolio of the target and the bidder is positive. Column Negative CWE presents the ARs for a sample of rivals of which the combibed wealth effect for the portfolio of the target and the bidder is negative. Combined wealth effect is value weigted CAR for target and bidder in (-5,+5) event window. Also the t-statistic is presented for each of the ARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Positive CWE				Negative CWE			
Day	Abnormal Return	Cumulative Abnormal Return	t-stat		Abnormal Return	Cumulative Abnormal Return	t-stat	
-10	-0.28 %	-0.28 %	-1.21		-0.14 %	-0.14 %	-0.42	
-9	0.12 %	-0.15 %	0.53		-0.51 %	-0.66 %	-1.51	
-8	0.00 %	-0.16 %	-0.01		-0.12 %	-0.77 %	-0.35	
-7	0.14 %	-0.02 %	0.61		-0.10 %	-0.87 %	-0.29	
-6	-0.18 %	-0.20 %	-0.79		-0.29 %	-1.17 %	-0.86	
-5	0.15 %	-0.04 %	0.67		-0.34 %	-1.50 %	-0.99	
-4	0.02 %	-0.02 %	0.11		0.09 %	-1.41 %	0.27	
-3	0.39 %	0.37 %	1.70	*	0.26 %	-1.16 %	0.75	
-2	0.33 %	0.70 %	1.44		0.04 %	-1.12 %	0.10	
-1	0.61 %	1.31 %	2.64	***	0.03 %	-1.09 %	0.09	
0	-0.32 %	0.99 %	-1.40		-1.17 %	-2.26 %	-3.46	***
1	0.19 %	1.18 %	0.83		0.04 %	-2.22 %	0.11	
2	-0.03 %	1.15 %	-0.12		-0.31 %	-2.54 %	-0.93	
3	0.06 %	1.21 %	0.25		-0.79 %	-3.33 %	-2.34	**
4	-0.30 %	0.91 %	-1.29		-0.08 %	-3.41 %	-0.22	
5	0.38 %	1.29 %	1.66	*	-0.63 %	-4.04 %	-1.87	*
6	-0.09 %	1.20 %	-0.40		-0.13 %	-4.18 %	-0.40	
7	0.15 %	1.35 %	0.68		-0.72 %	-4.90 %	-2.13	**
8	0.00 %	1.35 %	0.00		-0.12 %	-5.02 %	-0.37	
9	-0.34 %	1.01 %	-1.50		0.07 %	-4.95 %	0.22	
10	-0.41 %	0.60 %	-1.79	*	0.38 %	-4.57 %	1.11	
		n=485				*n=143*		

Note: *** 1% signifigance, ** 5% signifigance, * 10% signifigance

Figure 7: Cumulative Abnormal Returns for period (-10,10): Sample Divided Based on Combined Wealth Effect

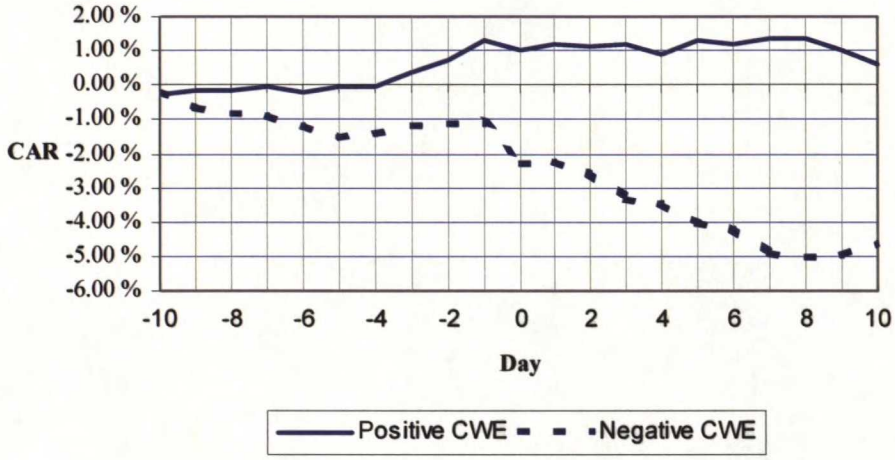


Table 14: Cumulative Abnormal Returns: Sample Divided Based on Combined Wealth Effect

Table shows the cumulative abnormal returns for two sub-samples of the horizontal sample of rivals for different event windows. Column Positive CWE presents the CARs for a sample of rivals of which the combibed wealth effect for the portfolio of the target and the bidder is positive. Column Negative CWE presents the CARs for a sample of rivals of which the combibed wealth effect for the portfolio of the target and the bidder is negative. Combined wealth effect is value weigted CAR for target and bidder in (-5,+5) event window. Also the t-statistic is presented for each of the CARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Positive CWE			Negative CWE		
	CAR	t-stat		CAR	t-stat	
	n=485			*n=143*		
Pre-announcement						
CARs (-10,-1)	1.31 %	1.80	*	-1.09 %	-1.02	
Announcement						
CARs (-1,0)	0.59 %	0.88		-1.14 %	-2.38	**
CARs (-2,+2)	0.78 %	1.52		-1.38 %	-1.83	*
CARs (-10,+10)	0.60 %	0.57		-4.57 %	-2.94	***
Post-announcement						
CARs (0,+1)	-0.13 %	-0.40		-1.13 %	-2.37	**
CARs (0,+5)	-0.02 %	-0.03		-2.95 %	-3.56	***
CARs (0,+10)	-0.71 %	-0.93		-3.48 %	-3.10	***
CARs (+10,+20)	0.75 %	0.98		-2.60 %	-2.32	**

Note: *** 1% signifigance, ** 5% signifigance, * 10% signifigance

5.4 Abnormal Returns for Private Equity Sample

The abnormal return on the announcement day for the private equity sample of rivals is not at all significant. Neither are the rest of the daily abnormal returns nor the cumulative abnormal returns for any event windows for the sample. I can not state that these results would support the acquisition probability hypothesis suggested by Song and Walkling (2000). I expected these results to come out stronger than the results for the horizontal sample of rivals. It could be that these companies are relatively smaller compared to their rivals and thus the market reaction is not as significant. I have to keep this in mind when analyzing the results of the multivariate regression as I am studying whether the relative size of the deal is one of the determinants of the realized CAR for rivals.

In Table 16 the daily abnormal returns from day -10 to +10 for the private equity sample of rivals are shown. Figure 8 shows the accumulation of abnormal returns to the sample of rivals, that includes only the private equity sample rivals which have also target market data (column Rivals A in Table 15). In Table 16 the cumulative abnormal returns for different event windows and two sets of private equity sample rivals are presented.

Table 15: Daily Abnormal Returns for the Private Equity Sample of Rivals

Table shows the abnormal returns for a sample of rivals of private equity targets for days (-10,10). Column Rivals A presents the ARs for a sample of rivals that have target market data in the PE target portfolio. Column Rivals B presents the ARs for all the rivals in the PE sample. Also the t-statistic is presented for each of the ARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Rivals A			Rivals B			
Day	Abnormal Return	Cumulative Abnormal Return	t-stat	Abnormal Return	Cumulative Abnormal Return	t-stat	
-10	0.00 %	0.00 %	0.00	-0.02 %	-0.02 %	-0.17	
-9	0.03 %	0.03 %	0.19	0.00 %	-0.02 %	-0.01	
-8	-0.07 %	-0.03 %	-0.39	0.00 %	-0.02 %	0.04	
-7	0.18 %	0.14 %	1.04	0.00 %	-0.02 %	0.01	
-6	0.11 %	0.25 %	0.65	0.11 %	0.10 %	0.94	
-5	0.15 %	0.40 %	0.87	0.03 %	0.13 %	0.29	
-4	0.17 %	0.57 %	1.01	0.19 %	0.32 %	1.62	
-3	0.26 %	0.84 %	1.55	0.24 %	0.57 %	2.04	**
-2	-0.10 %	0.73 %	-0.61	-0.08 %	0.49 %	-0.64	
-1	-0.06 %	0.68 %	-0.34	0.14 %	0.63 %	1.16	
0	-0.01 %	0.66 %	-0.08	0.08 %	0.71 %	0.63	
1	-0.04 %	0.63 %	-0.22	-0.05 %	0.65 %	-0.45	
2	-0.16 %	0.47 %	-0.93	0.06 %	0.71 %	0.50	
3	-0.06 %	0.41 %	-0.35	0.03 %	0.74 %	0.21	
4	-0.01 %	0.40 %	-0.06	-0.09 %	0.65 %	-0.77	
5	-0.20 %	0.20 %	-1.15	0.16 %	0.81 %	1.37	
6	-0.08 %	0.12 %	-0.49	0.00 %	0.81 %	0.00	
7	0.26 %	0.38 %	1.51	0.09 %	0.90 %	0.73	
8	0.07 %	0.45 %	0.44	-0.01 %	0.89 %	-0.08	
9	-0.05 %	0.40 %	-0.29	-0.02 %	0.87 %	-0.17	
10	-0.17 %	0.23 %	-1.01	-0.27 %	0.60 %	-2.28	
		n=795			*n=2041*		

Note: *** 1% significance, ** 5% significance, * 10% significance

Figure 8: Cumulative Abnormal Returns for the Private Equity Sample of Rivals for period (-10,10)

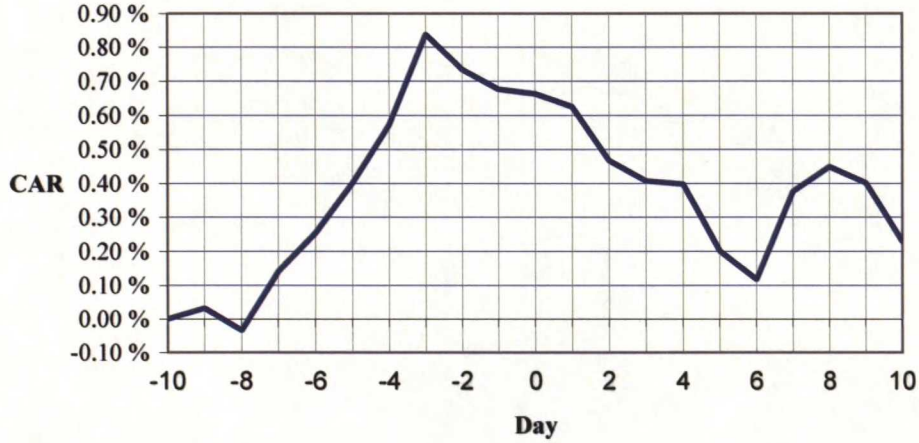


Table 16: Cumulative Abnormal Returns for the Private Equity Sample of Rivals

Table shows the cumulative abnormal returns for a sample of rivals of private equity targets for different event windows. Column Rivals A presents the CARs for a sample of rivals that have target market data in the PE target portfolio. Column Rivals B presents the CARs for all the rivals in the horizontal sample. Also the t-statistic is presented for each of the CARs. Confidence levels are presented on the right-hand side of the respective t-values.

	Rivals A		Rivals B		
	CAR	t-stat	CAR	t-stat	
	n=795		*n=2041*		
Pre-announcement					
CARs (-10,-1)	0.68 %	1.26	0.63 %	1.67	*
Announcement					
CARs (-1,0)	-0.07 %	-0.29	0.21 %	1.27	
CARs (-2,+2)	-0.37 %	-0.97	0.14 %	0.54	
CARs (-10,+10)	0.23 %	0.29	0.60 %	1.09	
Post-announcement					
CARs (0,+1)	-0.05 %	-0.21	0.02 %	0.13	
CARs (0,+5)	-0.48 %	-1.14	0.18 %	0.61	
CARs (0,+10)	-0.45 %	-0.79	-0.03 %	-0.09	
CARs (+10,+20)	0.01 %	0.02	-0.55 %	-1.39	

Note: *** 1% significance, ** 5% significance, * 10% significance

5.5 Determinants of Rival Cumulative Abnormal Returns

The results of the multivariate regression are presented in Table 17. OLS regression is run on sub-samples of rival cumulative abnormal returns. CAR for the (-5,5) event window is the dependent variable. The size of the sample varies from 132 to 3730 depending on the availability of data for each of variables in different setups. The regression is run with six different setups.

The first setup uses all the variables except Dummy PE. F-value is significant in 1% significance level and R-squared is 4.3%. Combined wealth effect is highly significant (t-value of 3.36, 1% significance) and has positive coefficient of 0.364. Rest of the variables are not significant and thus CWE represents the all the explanatory power of this setup. The result concerning CWE is in line with the work of Shahrur (2005). This result confirms the phenomenon that was already found in Section 5.3.1, that is value creating mergers result in higher rival abnormal gains and value destroying mergers result in lower abnormal gains.

The second setup uses same variables as the first setup less the variable for relative size of the deal. With this setup it was determined whether dropping Relative Size from the equation yields more significant results. This was done due to Relative Size and LnSize being somewhat correlated. F-value is significant in 1% significance level and R-squared is 4.2%. The results for CWE are similar to those in the first setup. The rest of the variables are not significant.

The third setup uses a sub-sample of rivals of value destroying mergers, that is that in this sample the merger announcement has a negative combined wealth effect. The variables in this sample are combined wealth effect, sales growth, gearing, Dummy Same Country, LnSize and relative size of the deal. F-value is significant in 5% significance level and R-squared is 11.0%. The coefficient for combined wealth effect gets a value of 1.0 and is significant in the 10% significance level. This result implies that 1% negative combined wealth effect results in 1% negative announcement effect for the rival. The rest of the variables are not significant. There is no prior findings, to my knowledge, that would state this phenomenon of negative combined wealth effect takeovers destroying rival value. This finding opens a question why is this phenomenon present in this data set.

Also the fourth setup uses a sub-sample of rivals of value destroying mergers, that is that in this sample the merger announcement has a negative combined wealth effect. The variables in this sample are combined wealth effect, sales growth, Dummy Same Country and LnSize. F-value is significant in 1% significance level and R-squared is 9.6%. The coefficient for combined wealth effect gets a value of 1.3 and is significant in the 5% significance level. Hence, the results concerning combined wealth effect are even stronger in this setup than in the third setup. Sales growth gets a negative coefficient with a t-value of -1.66 (significant in 10% significance level). This is in line with the work of Song and Walkling (2000) and supports the acquisition probability hypothesis. However, I acknowledge the fact that the coefficient is very close to zero so the result is by no means strong. I have to state that these results, in relation to theories presented in Section 2.3, with value destroying sub sample should be interpreted with caution because all the theories explaining rival abnormal returns expect a positive wealth effect for merger. The rest of the variables are not significant.

The fifth setup uses a sub-sample of rivals of value creating mergers, that is that in this sample the merger announcement has a positive combined wealth effect. The variables in this sample are combined wealth effect, sales growth, gearing, Dummy Same Country, LnSize and relative size of the deal. F-value is not significant and R-squared is 2.0%. Thus I can state that this model has very little, if any, explanatory power for rival abnormal returns. However, it should be noted that the coefficient for dummy Same Country gets a positive value with 5% significance. This result implies that in value creating mergers the rival being in the same home country as the target realizes higher abnormal return. The coefficient of Dummy Same Country changes sign depending on the takeover announcement being either value destroying or value creating. The implication from this are: In value creating cases the announcement effect for rivals is more positive when rival is originated from the same country as the target. In value destroying cases the announcement effect for the rivals is less negative for the rivals being originated from the same country as the target than for those rivals that are originated from different country than the target.

The sixth setup uses sales growth, gearing, Dummy Same Country, Dummy Private Equity and LnSize as the explaining variables. This setup maximizes the number of observations and tries to find out whether the deal being a private equity deal has an effect on the rival abnormal returns. The F-value is not significant, R-squared is practically zero and all the

variables are insignificant. This model has no explanatory power. I tried other similar setups, but excluding CWE from the model resulted in no explanatory power in all setups.

Concluding the multivariate analysis I can state that the combined wealth effect is a clear determinant for explaining the rival abnormal returns and the rest of the variables have very little, if any, explanatory power with this data set.

Table 17: Determinants of Rival CARs

Table reports the results from OLS regression of the determinants of the rival abnormal returns. Sales Growth (SALESGR in the equation) is the growth rate, in percentages, of the rival firm's sales during the previous fiscal year preceding the takeover announcement. Gearing (GEARING in the equation) is the gearing level of the rival firm measured in the last quarter report preceding the announcement. Dummy SameCountry is a dummy variable for controlling whether the rival is from the same country as the target. Combined Wealth Effect (CWE in the equation) is the cumulative abnormal return to a value-weighted portfolio of bidder and target firms over the (-5,5) event window. Dummy Private Equity is a dummy variable for controlling whether the deal, that the rival on hand is defined for, is a private equity deal. LnSize (LNSIZE in the equation) is the natural logarithm of the dollar value enterprise value of the target at the time of the announcement. Relative Size (RELATSIZE in the equation) is the relative size of the deal, that is the ratio of the market capitalization of the target to that of the bidder. Setups 3, 4 and 5 are performed on sub-samples based on CWE of the takeover announcement being either below or above zero. T-values are presented in parentheses.

$$CAR_{(-5,+5)} = \alpha + \beta_1 SALESGR + \beta_2 CWE + \beta_3 GEARING + \beta_4 LNSIZE + \beta_5 RELATSIZE + \beta_6 D_{SameCountry} + \beta_7 D_{PE} + \varepsilon$$

	Expected	Regression Setup					
Variable	sign	1	2	3	4	5	6
Note:				CWE<0	CWE<0	CWE>0	
Constant		-0.0006	-0.0108	-0.0952	-0.0535	-0.0089	-0.0047
		(-0.04)	(-1.71*)	(-0.72)	(-0.43)	(-0.54)	(-0.84)
Rival Characteristics							
Sales Growth	-	-0.00001	-0.00001	-0.00001	-0.00001	0.0001	-0.0000
		(-1.31)	(-1.31)	(-1.59)	(-1.66*)	(1.33)	(-0.39)
Gearing	+	0.0000	0.0000	0.00001		0.0000	0.0000
		(0.40)	(0.38)	(0.44)		(0.34)	(0.56)
Dummy Same Country	+	0.0123	0.0135	-0.0133	-0.0169	0.0261	0.0007
		(1.20)	(1.35)	(-0.73)	(-0.94)	(2.12**)	(0.16)
Deal Characteristics							
Combined Wealth Effect	+	0.3641	0.3949	0.9971	1.3047	0.3163	
		(3.36***)	(4.06***)	(1.76*)	(2.54**)	(1.68*)	
Dummy Private Equity	+						0.0038
							(1.02)
LnSize	+	-0.0022	-0.0018	0.0168	0.0142	-0.0009	0.0003
		(-0.95)	(-0.80)	(0.90)	(0.81)	(-0.33)	(0.30)
Relative Size	+	0.0072		0.0865		-0.0008	
		(0.65)		(1.33)		(0.06)	
R^2		0.0426	0.0418	0.1103	0.0963	0.0197	0.0004
F-Value		3.930***	4.636***	2.582**	3.437***	1.331	0.313
Observations		537	537	132	134	405	3730

Note: *** 1% signifigance, ** 5% signifigance, * 10% signifigance

5.6 Summary of the Results

In this section I will summarize the results of this study. In the paragraphs below are the results concerning each of the hypotheses of this study discussed and finally in Table 18 are the results summarized in more compacted manner.

The first hypothesis concerning the existence of the rival abnormal returns is studied with event study analysis. The day -1 return for rivals is significantly positive (0.22%) and the announcement day return significantly negative (-0.27%). The CARs for different announcement period windows are insignificant and thus these results do not directly support any of the theories presented in Section 2.3.

The second and third hypotheses suggesting that the rival cumulative abnormal returns are positively related to the relative size of the deal and the absolute size of the deal, respectively, do not get any support from the multivariate analysis. The coefficients are insignificant in all of the setups.

The fourth hypothesis concerning combined wealth effect of the takeover announcement having a positive relation with rival abnormal returns is studied with both, the event study analysis and the multivariate analysis. The event study analysis yields a clear result about the value destroying takeovers destroying also rival value. The rival CAR for the (-10,10) event window, for example, is -4.57% (significant in 1% significance level). In the multivariate setting the combined wealth effect is clearly significant determinant of rival returns being significant in five out of five setups tested. The coefficients for combined wealth effect are larger in value destroying setups than in other setups but nonetheless significant in all the setups.

The fifth hypothesis suggesting the rival firm's growth rate being negatively related to the rival abnormal returns is tested with multivariate analysis. The coefficient is weakly significant in one out of 6 setups tested. However the coefficients are practically zero in all of the setups and thus I cannot state that I would find results supporting this hypothesis.

The sixth and seventh hypotheses concerning the leverage level of the rival and the acquirer type being private equity investor having a positive relation with rival abnormal returns,

respectively, are rejected. I cannot find any significant results in the multivariate analysis concerning these variables.

The eight hypothesis suggesting that the rival and the target company being originated in the same country has a positive relation with rival abnormal returns is also tested with multivariate analysis. The result is significantly in line with the hypothesis in one out of the six setups. The F-value of the setup is not significant and thus the result is not unambiguous.

Table 18: Summary of the Findings

Table summarizes the findings of the study. For each of the hypothesis (number shown in the first column), the main findings are presented.

#	Hypothesis	Earlier studies	Methodology	Result
1	Positive wealth effect to the horizontal rivals of the European acquisition targets.	Eckbo (1983), Eckbo and Weir (1985), Song and Walkling (2000) and Shahrur (2005)	Event study	Positive wealth effect of 0.22% on day -1 and negative wealth effect of 0.27% on day zero resulting in the insignificant announcement period CARs.
2	Rival abnormal returns are positively related to the relative size of the deal.	Shahrur (2005)	Multivariate regression	Insignificant results in all setups.
3	Rival abnormal returns positively related to natural logarithm of the deal size.		Multivariate regression	Insignificant results in all setups.
4	Rival abnormal returns positively related to the combined wealth effect of the deal.	Shahrur (2005)	Event study, Multivariate regression	Event: Value destroying deals result in negative rival CARs (-4.57% for -10 to 10 event window). Multivariate: CWE is significantly positively related to rival abnormal returns.
5	Rival abnormal returns negatively related to the growth rate of the rival firm's sales.	Song and Walkling (2000)	Multivariate regression	Weakly significant in 1 of 2 value destroying setups. Insignificant in other setups. Negative coefficients close to zero.
6	Rival abnormal returns positively related to the leverage level of the rival firm.	Song and Walkling (2000)	Multivariate regression	Insignificant results in all setups.
7	Rival abnormal returns positively related to the acquirer being a private equity company.	Derived by the author from acquisition probability hypothesis of Song and Walkling (2000)	Event study, Multivariate regression	Event: Insignificant results for all the different windows. Multivariate: Insignificant results.
8	Rival abnormal returns positively related to target and rival being originated in the same country.	Derived by the author from Shahrur (2005)	Multivariate regression	Significant in value creating setup. F-value of the setup insignificant. Insignificant in other setups.

6 CONCLUSIONS AND FUTURE WORK

This thesis studies the existence and characteristics of abnormal returns to rivals of acquisition targets in European context during period 1993 to 2006. The research question of this thesis is two-folded. First, the abnormal returns to European rival firms of European acquisition targets are investigated. Secondly the possible deal and rival characteristics behind the abnormal returns to rivals of acquisition targets are sought. This study adds to the existing literature with providing a European fresh data set for determining rival abnormal returns. The papers around the subject so far have been conducted mainly with US data. The contribution of this thesis is especially in the finding that value destroying acquisition announcements destroy also rival value.

The dataset used in this thesis consists of 265 European takeover announcements that function as the events of this study. For the 265 European targets a rival portfolio of 4327 European companies is formed based on the targets and the rivals sharing a four-digit SIC code. The dataset is divided into sub-samples based the acquirer being a horizontal competitor or a private equity company. Another sub-sample classification is based on the merger announcement being either value creating or value destroying. The value creation is calculated as the combined wealth effect, i.e. value weighted CAR of the acquirer and the bidder, over 11-day event window. Event study methodology is utilized to study the abnormal returns and cumulative abnormal returns for different event windows around the 265 takeover announcements. The ARs and CARs are identified separately for rivals of horizontal targets and for rivals of private equity targets. Also multivariate regression is applied for determining characteristics behind abnormal returns.

Rivals of acquisition targets receive a positive wealth effect of 0.22% on day -1 and negative wealth effect of 0.27% on day zero resulting in the announcement period CARs for different windows being insignificant. For a sub-sample of horizontal deals the results for rival abnormal returns are similar to those in the whole sample. The abnormal returns for rivals of private equity targets are insignificant. The classification based on combined wealth effect yields a clear result. Value destroying takeover announcements result in rivals experiencing significant negative CARs for different windows. CARs are -1.14% and -4.57% for (-1,0) and (-10,10) event windows respectively. A clear result from multivariate analysis is that the

combined wealth effect is significant factor having an effect on rival abnormal returns. The multivariate setups in this thesis do not have much explanatory power and thus it should be stated that the result that can be interpreted is the one about combined wealth effect. However, this result is strongly significant and it does raise a question that why does the combined wealth effect have such a strong effect on the rival abnormal returns.

Future work concerning the subject of this study should include more testing of variables behind the abnormal returns. For example Herfindahl index can be used as proxy for the magnitude of shock a given deal is to an industry and thus the rivals in that industry. Also the identification of rivals can be addressed in more detail. Most probably there could be stronger results found if one could identify the rivals for each of the targets precisely. An interesting question arising from the findings of this study is the question that why do value destroying takeover announcements destroy also value of the rival shareholders. This could be studied in more detail with different variables.

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